New Zealand Synchrotron Group

Annual Report 2025

TABLE OF CONTENTS

CHAIRMAN'S REPORT 1

RESEARCH HIGHLIGHTS 3

Supporting hundreds of New Zealand researchers 3

High-quality science attracts substantial funding for New Zealand researchers 3

2024-2025 Case studies 3

Improving semi-conductor surfaces for electronic devices 4

Diagnostic probes for rapid identification of disease-causing bacteria 5

The search for new ways to store, process and transfer information 6

Reversing antimicrobial resistance and improving treatment of tuberculosis 7

Applying interdisciplinary science to food industry innovation 8

Not always what you expect: Recovering zinc from arc furnace dusts 9

REVIEW OF OPERATIONS JULY 2024-JUNE 2025 10

New beamlines expand opportunities for New Zealand research 10

How proposals for access to the Australian Synchrotron are assessed 11

Use of the Australian Synchrotron by New Zealand researchers 12

Additional support for students 14

PREPARING FOR THE FUTURE 16

THE AUSTRALIAN SYNCHROTRON 17

CORPORATE GOVERNANCE 22

Annex 1: Publications by New Zealand researchers 24

Annex 2: Beamtime awarded 30

FINANCIAL STATEMENTS 42

CHAIRMAN'S REPORT

The past year was the nineteenth in which the New Zealand Synchrotron Group Ltd (NZSG) provided support for New Zealand researchers using the Australian Synchrotron and was my second as its Chairman. I am delighted to be able to support this important programme and partnership with Australia in delivering access to one of the region's most impressive pieces of research infrastructure to the New Zealand research community.

The past year saw the greatest use made of the Australian Synchrotron since New Zealand's partnership with the facility commenced in 2006. This was achieved by the extra beamtime that became available as the first of the new beamlines came into full operation. New Zealand researchers were awarded 464 shifts in 2024/25. In total, 242 visits were made by New Zealand researchers (140 individuals as many people went more than once). In addition, a further 54 people accessed the beamlines remotely and 44 were logged in to retrieve the data generated.

The level of demand for beamtime on the ten original beamlines remains high. However, because a fixed number of shifts are available for New Zealand users, only 73% of the proposals were ultimately awarded beamtime.

Interest in the new beamlines has also been very strong. New Zealand proposals have been particularly successful in gaining time with 25 of the 26 proposals submitted awarded beamtime. It was also pleasing to see the increase in the number of publications arising from the use of the Synchrotron by New Zealand scientists. This continues ongoing increases since the downturn during and after the COVID-19 period. There were 52 papers published in the past year compared to 38 the previous year.

The programme of support for young and emerging researchers was continued during the year. Grants were made available so that 14 students could travel to Melbourne as additional members of the teams using the Australian Synchrotron. Travel grants were also made to 4 students presenting at the Annual User Meeting in November 2024. The Asia Oceania Forum for Synchrotron Radiation Research, of which NZSG is a member, also resumed its annual Synchrotron Radiation School and NZSG sent 4 students to the 2024 School at the Australian Synchrotron in August.

COVID-19 affected the timetable for the construction of the new beamlines, but progress was made with the commencement of user operations on the new beamline (Macromolecular Crystallography 3 – MX3) in June 2025. There have been a few further delays with the last three new beamlines. The first Advanced Diffraction and Scattering beamline (ADS1) is expected to be operational in September 2026, the second (ADS2) in November 2026. New Zealand is a major contributor of funding for the new beamline programme with NZSG providing A$12 million towards the programme, all of which has now been paid.

The company generated an operating surplus of $29K for the year which was significantly ahead of the budgeted loss of $132K. The major reasons for this were $34K of unbudgeted revenue received from organisations that are not parties to the synchrotron access funding arrangement for

commercial access, and $69K less expenditure on purchasing commercial beamtime and additional merit beamtime than budgeted. Income from interest was also greater than anticipated with the higher interest rates during the year.

The company's cash position at the end of the year was $824K and shareholder equity rose from $844K to $873K. Directors have considered the level of reserves that would be sufficient to cover any sudden crisis and took the view that the reserves were above the level demanded by prudent governance. Accordingly, a decision was made to waive 50% of the charge to institutions under the funding contract for the 2025/26 year, and to maintain a greater than usual level of expenditure to strengthen future synchrotron science support activities, such as student attendance at workshops and training schools.

As indicated in previous reports, changes in the exchange rate are one of the most significant uncertainties the company faces. This has previously been managed by taking a series of forward contracts to lock in and provide certainty around future exchange rates. As there is only one more annual payment to be made to ANSTO under the current contract, a change in strategy was made for the coming year and NZ$800K from the funds received from MBIE have already been used to purchase the Australian currency required for the 2026 payment. There is also a vanilla option held to provide protection against a substantial fall in the exchange rate for the final payment of the current funding and access agreement in 2026.

As the end of the current funding and access arrangement is less than a year away (30 June 2026), a major focus for the Board is securing support from the research community and from the government for its continuation. A conditional commitment to funding has been made by MBIE and the terms of a future access arrangement have been agreed with ANSTO. A prospectus has been distributed to shareholders inviting them to be part of the future access arrangement using a similar shared funding approach to the current agreement.

The Board has been very well supported by the Royal Society Te Apārangi which has provided secretariat services to NZSG. In particular, I would like to acknowledge the contribution make by Dr Don Smith in assisting the board, administering the New Zealand Synchrotron Support Programme and looking after our interests in Australia and on the Asia Oceania Forum for Synchrotron Radiation Research. Don has signalled his intention to retire from his role in the middle of 2026 and I would like to thank him for the many years of support he has given the Board and the synchrotron user community.

I would also like to acknowledge the contribution from the Chairs of the Access Committee, Emeritus Professor Geoff Jameson who stepped down from that role in November 2024 and Professor Geoff Waterhouse who replaced him. Associate Professor Vladimir Golovko, a long-standing member of the Committee retired at the end of 2024 and Dr Joanna Hicks, Dr Courtney Ennis and Dr Ben Kennedy have been welcomed on to the Committee as replacements. Finally, I would like to thank my fellow directors, Professor Catherine Day, Emeritus Professor Geoff Jameson and new directors Professor Roger Reeves and Professor Geoff Waterhouse.

Professor BR Cowan
Chair

RESEARCH HIGHLIGHTS

Access to the Australian Synchrotron enables New Zealand scientists to answer research questions that would otherwise remain a mystery.

Whether the research involves developing therapeutic options for human, animal or plant disease, understanding past geological events to better predict future occurrences, developing more sustainable energy sources, or improving primary industries' yields (among many applications), synchrotron science sheds light on a wealth of processes in the biological, physical and chemical sciences.

PhD candidate Marco Vas (University of Auckland) setting up an experiment on the Powder Diffraction (PD) beamline

Supporting hundreds of New Zealand researchers

More than 230 New Zealand scientists benefited from access to the Australian Synchrotron through the New Zealand Synchrotron Group (NZSG) in 2024-2025. Many of these were students and early career researchers.

This year, thanks to the NZSG, 140 New Zealand researchers visited the Australian Synchrotron, with many able to travel more than once. A further 54 people accessed the beamlines remotely. Twelve graduate students were also able to visit the Synchrotron for the first time thanks to NZSG travel grants.

Our researchers published 52 peer-reviewed articles this year using Australian Synchrotron-generated data: equalling the pre-Covid high.

High-quality science attracts substantial funding for New Zealand researchers

The outstanding research quality of synchrotron-enabled science attracts funding through Aotearoa New Zealand's most sought after and prestigious science investments, including MBIE Catalyst, Endeavour Research Programme and Smart Ideas investments, Health Research Council and RSNZ Marsden Full and Fast-start grants.

2024-2025 Case studies

The following case studies are a taste of what NZSG-supported researchers have achieved this year. Visit our new website to read other case studies and learn more about the impactful science New Zealand researchers are undertaking using the Australian Synchrotron.

IMPROVING SEMI-CONDUCTOR SURFACES FOR ELECTRONIC DEVICES

Martin Allen, Roger Reeves, Adam Hyndman and Ryan Adams (University of Canterbury) and Alex Barnes (University of Auckland)

The manufacture of many electronic devices involves linking electrical contacts and interfaces to the surfaces of semiconductor materials. Optimising these surfaces improves the performance of the connection and device efficiency.

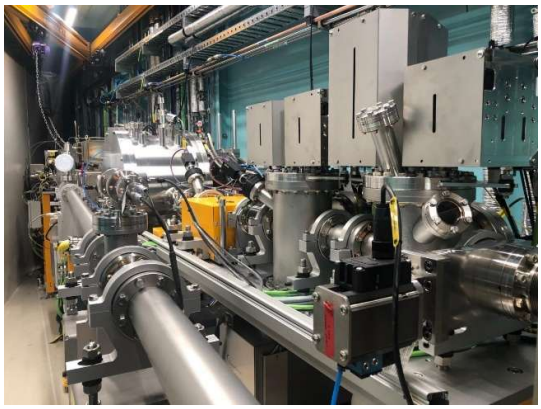
The challenge

Tin oxide (SnO_2), zinc oxide (ZnO), and gallium oxide (Ga_2O_3) semiconductors are increasingly used in applications such chemical and biological sensors, UV detectors, solar cells, lithium-ion batteries, and catalysis. However, their performance can be limited by the quality of the electrical contacts to their surfaces.

The research

The project team used the Soft X-ray Spectroscopy (SXR) and Medium Energy X-ray Absorption Spectroscopy (MEX-2) beamlines to develop new sulphur-modification processes for optimising the surface electronic properties of these advanced materials.

This research built on earlier work to improve understanding of the electronic properties of tin oxide, zinc oxide and gallium oxide surfaces after a range of different types of sulphur treatments.



Medium Energy X-ray Absorption Spectroscopy (MEX-2) beamline hutch at the Australian Synchrotron

The impact

This project contributes to new prototype high-efficiency electronic gallium oxide devices. These new devices significantly increase the efficiency of renewable power generation, distribution, and use, as well as the efficiency of electric vehicles and Lithium-ion fast charging stations.

Importantly, the experience gained by PhD students involved in the project led to their recruitment by Rakon Limited and an ongoing Research & Development relationship between the senior researchers and the company. Rakon Limited are a global leader in frequency control products used in 5G networks, satellites, emergency beacons, and autonomous vehicles.

DIAGNOSTIC PROBES FOR RAPID IDENTIFICATION OF DISEASE-CAUSING BACTERIA

Matthias Fellner, George Randall and colleagues (University of Otago)

Diagnostic techniques in clinics today mostly use information from blood samples, which can be time consuming and inaccurate. The consequences of slow diagnosis of potentially life-threatening infections can result in poor clinical outcomes.

Staphylococcus aureus culture

The challenge

Accurate identification of hard-to-treat infections like *Staphylococcus aureus* is not always reliable using blood samples. Specific probes for any infected tissue would enable imaging of the location and extent of active infection and would greatly improve the management of the most life-threatening infections.

The research

The research team used the Macromolecular and Microfocus Crystallography(MX) beamline to develop small molecules as diagnostic tools to target specific proteins in the bacterial pathogens. The protein structures of highly specific serine hydrolases the targets of these diagnostic tools.

The impact

The team have resolved the structure of *S. aureus* serine hydrolase FphI – a world first – as well as structures related to FphE. The research has resulted in several peer-reviewed articles, with several more publications in preparation.

The researchers are also investigating patent and commercial opportunities. In a promising development, preclinical trials of the probes' ability to identify S. *aureus* ear infections are planned in the United States.

Selected reference:

Fellner M, Randall G, Bitac I, Warrender AK, Sethi A, Jelinek R, Kass I. 2024. Similar but distinct-biochemical characterization of the *Staphylococcus aureus* serine hydrolases FPhm and FphI. Proteins. https://doi.org/10.1002/prot.26785

THE SEARCH FOR NEW WAYS TO STORE, PROCESS AND TRANSFER INFORMATION

Fryderyk Lyzwa and Kane Hill (University of Auckland), Kiri van Koughnet, Robert Buckley and Shen Chong (Te Herenga Waka – Victoria University of Wellington)

The carbon costs of electronics in conventional computers have overtaken air travel and continue to rise every year. New materials are needed to limit energy consumption, reduce carbon footprints, and future-proof computation.

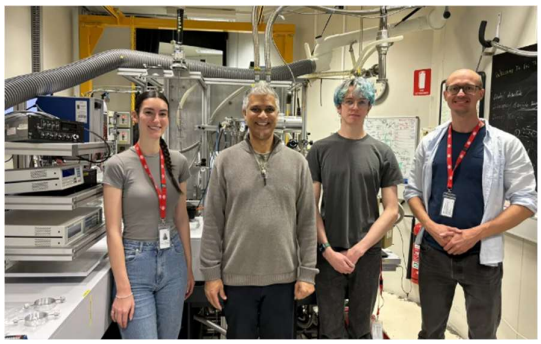
The challenge

Thin oxide films are attractive candidates to reduce the environmental and economic costs of next-generation devices. Unconventional bench-top systems struggle to provide the high radiation flux and the signal-to-noise ratio needed to perform a detailed study of these materials.

The research

The team used the Terahertz/Far-Infrared (THz/Far-IR) beamline to study the low-energy dynamics of a series of quantum materials with unusual ground states. They used the information gained to explore the macroscopic electronic and magnetic behaviour of materials like cobalt molybdates.

To strengthen their research, the team added complementary approaches (both experimental and theoretical) to the synchrotron-generated data.



Kiri Van Koughnet, Dom Appadoo, Kane Hill and Freddy Lyzwa at the Australian Synchrotron facility in Melbourne

The impact

The research outcomes contribute to developing more efficient and powerful computer memory storage systems.

Working on site at the Australian Synchrotron provided students Kane Hill and Kiri van Koughnet with new research skills and opportunities otherwise unavailable to them. The research team shared their experiences with Claire Concannon of Radio New Zealand.

REVERSING ANTIMICROBIAL RESISTANCE AND IMPROVING TREATMENT OF TUBERCULOSIS

Jamie Taka, Ghader Bashiri, Richard Kingston, Shaun Lott, David Goldstone, Daniel Body, Stephanie Dawes, Matthew Sullivan, Ishana Ratti and Laura Walsham (University of Auckland)

Antimicrobial resistance (AMR) is the third largest cause of death from infectious disease and threatens to return us to the pre-antibiotic era. Tuberculosis (TB) is the leading cause of death from a single infectious agent.

Medical professionals reviewing lung X-ray

The challenge

Combatting infectious disease is increasingly challenging due to AMR. The validation of novel therapeutic targets or the rescue of first line therapies is of vital importance to address this challenge.

The research

The researchers implemented several projects on the Biological Small Angle X-ray scattering (BioSAXS) beamline.

One project characterises regulatory hub enzymes including Isocitrate lyase isoform 2 (ICL2) in *Mycobacterium tuberculosis,* the causative agent of TB. The ICL2 enzyme is a possible new therapeutic target to combat the bacterium, and consequently the disease.

Another project is developing tools that re-sensitise resistant TB bacteria to existing antibiotics using RNase HI inhibitors.

The impact

The data from the BioSAXS enabled the researchers to probe the impact of mutations on key protein domains in ICL2. The results suggest a novel therapeutic strategy against TB through developing small molecules that keep ICL2 in its activated form.

The researchers also characterised RNase HI inhibitors using the BioSAXS. These inhibitors could help existing first line therapy antibiotics work up to 100x more effectively in the treatment of TB.

APPLYING INTERDISCIPLINARY SCIENCE TO FOOD INDUSTRY INNOVATION

Aiqian Ye, Mark Waterland and Di Liu (Massey University), Cushla McGoverin (University of Auckland) and Jitraporn Vongsvivut (Australian Synchrotron)

Hybrid proteins can improve the nutritional profile, taste, and sustainability of food products. In the food industry, plant-based proteins are blended with animal or fungal proteins to create healthier, more environmentally friendly, and better-tasting alternatives to traditional products.

The challenge

While hybrid proteins are important for innovation in the food industry, their interactions can be difficult to predict.

The project team explored how cutting-edge techniques can be used to better understand the structure and function of the different proteins, and their interactions at the microscopic level.

Foods containing proteins

The research

The project team used the macro Attenuated Total Reflectance (ATR) and Fourier Transform Infrared (FTIR) functionality of the Infrared Microspectroscopy (IRM) beamline to map plant proteins, milk proteins, and fats in hybrid processed cheese analogues.

Combined with machine learning models, these data will better resolve molecular interactions in complex food systems. The results will be compared with Raman microscopy to highlight the respective advantages and limitations of the different approaches.

The impact

Aotearoa New Zealand has a long history of innovation in the food industry. Synchrotron science enables this innovation to continue. In a world with an increasing population and diminishing resources, the ability to innovate smarter food solutions is more important than ever before.

This project is one example of applying state-of-the art technology in a field where Aotearoa New Zealand has traditionally been a leader.

NOT ALWAYS WHAT YOU EXPECT: RECOVERING ZINC FROM ARC FURNACE DUSTS

Aaron Marshall, Chang Wu and Gabriela Junk (University of Canterbury)

Science is based on testing hypotheses that build on what is already known. But prior understanding does not always guarantee expected results. Fortunately, unexpected results can have a silver lining.

The challenge

The team had developed a process to extract zinc from a waste product of the steel recycling industry. However, the structure of the original material and the converted phases were too much alike for resolution with conventional instruments.

The research

The researchers used the Powder Diffraction (PD) beamline to differentiate the source and converted materials.

Unfortunately, decomposition of the zinc-iron oxide was not easily controllable at the required reactor conditions (700-800 °C, hydrogen atmosphere) and gave inconsistent results.

The impact

While the experiment did not yield the anticipated outcome, the team found the decomposition reaction to be an order of magnitude faster than expected. This means that the industrial reactors needed for the commercial process can be much smaller than originally thought.

This new process is being commercialised by Zincovery, who are building a large demonstration plant in Christchurch and may fund more zinc recovery-related research.

Pouring liquid metal from an arc furnace

Research highlights image sources

1. Research highlights: PhD candidate Marco Vas (University of Auckland) setting up an experiment on the Powder Diffraction (PD) beamline courtesy of ANSTO
2. IMPROVING SEMI-CONDUCTOR SURFACES FOR ELECTRONIC DEVICES: Medium Energy X-ray Absorption Spectroscopy (MEX-2) beamline hutch at the Australian Synchrotron courtesy of ANSTO
3. DIAGNOSTIC PROBES FOR RAPID IDENTIFICATION OF DISEASE-CAUSING BACTERIA: *Staphylococcus aureus* culture Dabarti CGI via Shutterstock
4. THE SEARCH FOR NEW WAYS TO STORE, PROCESS AND TRANSFER INFORMATION: Kiri Van Koughnet, Dom Appadoo, Kane Hill and Freddy Lyzwa at the Australian Synchrotron facility in Melbourne Claire Concannon / RNZ
5. REVERSING ANTIMICROBIAL RESISTANCE AND IMPROVING TREATMENT OF TUBERCULOSIS: Medical staff reviewing lung X-ray BELL KA PANG via Shutterstock
6. APPYING INTERDISCIPLINARY SCIENCE TO FOOD INDUSTRY INNOVATION: Foods containing proteins Oleksandra Naumenko via Shutterstock
7. NOT ALWAYS WHAT YOU EXPECT: RECOVERING ZINC FROM ARC FURNACE DUSTS: Pouring liquid metal from an arc furnace Shestakov Dmytro via Shutterstock

REVIEW OF OPERATIONS JULY 2024-JUNE 2025

New beamlines expand opportunities for New Zealand research

During the past year the first four of the new beamlines developed under the BRIGHT programme became operational, meaning that 14 beamlines are now available (Table 1). The usage of these new beamlines has altered the pattern of demand on some of the original beamlines. For example, most of the small-angle X-ray scattering work previously undertaken on the SAXS/WAXS beamline was assigned to the new biological small-angle X-ray scattering BioSAXS beamline. The BioSAXS provides new opportunities for biologists as it is specifically designed for structural biology and has specialised facilities for protein work.

Table: 1: Original and new beamlines in operation at the Australian Synchrotron, with their actual or planned operational dates. Detailed descriptions and potential applications can be found in *The Australian Synchrotron* section.

Beamline	**Operational date**
Macromolecular crystallography 1 (MX1)	Jan 2008
Infrared spectroscopy and microscopy (IRM) & FTIR spectrometer (THz)[1]	Early 2008
Powder diffraction (PD)	Feb-May 2008
Soft X-ray absorption spectroscopy (SXR)	Late 2008
X-ray absorption spectroscopy (XAS)	Jan 2009
Small-and wide-angle X-ray scattering (SAXS/WAXS)	Early 2009
Macromolecular crystallography 2 (MX2)	Mid 2009
X-ray fluorescence microspectroscopy (XFM)	Early 2009
Imaging and medical (IM)	2013
Micro-computed tomography (MCT)	2022
Medium energy X-ray absorption spectroscopy (MEX1)	Nov 2022
Medium energy X-ray absorption spectroscopy (MEX2)	Apr 2023
Biological small-angle X-ray scattering (BSX)	Mar 2024
High performance macromolecular crystallography (MX3)	Jun 2025
Advanced diffraction and scattering (ADS1)	Sep 2026
X-ray fluorescence nanoprobe (NANO)	Oct 2026
Advanced diffraction and scattering (ADS2)	Nov 2026

The addition of the new beamlines also creates opportunities to support research that previously might not have been awarded beamtime because demand was too great. While most applications this year have come from existing users, it was pleasing to see new groups using both the original and new beamlines. However, a lack of awareness of the new capabilities on offer means some sectors of the wider New Zealand research community may not yet be taking advantage of the

[1] The infrared spectroscopy (IR) beamline features two end stations: an FTIR spectrometer (THz) and an infrared microscope (IRM). Effectively this provides a total of 14 beamlines.

opportunities offered. Consequently, plans to promote the Australian Synchrotron and its new potential to the wider research community in the year ahead.

Australian Synchrotron staff continue to be collaborative and supportive of NZSG and New Zealand researchers in general. They were particularly helpful when new arrangements were introduced for the allocation of merit time and preferred access on the new beamlines.

Under the current agreement with ANSTO, NZSG researchers effectively have three types of access to the Synchrotron:

1. **Merit access to the original beamlines**. New Zealand researchers have rights to a specific number of shifts annually.[2] There is no restriction on which beamlines the shifts are used. This arrangement effectively puts our researchers in a priority position, as these shifts must be allocated by ANSTO before Australian researchers' shifts.

2. **Preferred access to the new beamlines**. Access is guaranteed to NZSG because of New Zealand's capital investment. Guaranteed access persists for five years after each new beamline comes into operation. The first of these rights expire in 2028 and the remainder will expire around 2031, five years after the last of the new beamlines begins operation.

3. **Merit access to the new beamlines**. Proposals by Australian and New Zealand researchers compete for time, which is allocated based solely on research quality.

Guaranteed merit access to the original beamlines and preferred access to the new beamlines demonstrates the value of the New Zealand government and research community investment in the Australian Synchrotron. With a sound science partnership between our two countries, Aotearoa New Zealand has access to all the benefits of this world class facility.

How proposals for access to the Australian Synchrotron are assessed

Proposals for access are assessed by ANSTO and NZSG in different ways depending on the type of access and whether original or new beamlines are requested.

Approximately 80% of the available time on the original beamlines is assigned to the merit access pool. Every four months, the Australian Synchrotron calls for competitive proposals from researchers worldwide, including from New Zealand. Although researchers apply directly to the Australian Synchrotron, NZSG oversees the final selection of New Zealand applications.

The agreement with ANSTO enables NZSG to decide how our merit access to the original beamlines is allocated to gain the best advantage for the New Zealand research community. This includes distributing time among beamlines and ranking of the New Zealand proposals. The Board established the NZSG Access Committee to assess proposals for merit access. The committee hold Zoom meetings throughout the year to agree their selections. The committee members are:

- Professor Geoff Waterhouse, University of Auckland (Chair)
- Dr Courney Ennis, University of Otago
- Dr Joanna Hicks, University of Waikato

[2] Shifts are units of time that the researcher can use to access the synchrotron, with three 8-hour shifts per day.

- Emeritus Professor Geoff Jameson, Massey University
- Dr Ben Kennedy, University of Canterbury

For the first five years after each new beamline begins operating, New Zealand receives guaranteed (preferred access) beamtime in recognition of our contribution to the cost of the new beamlines. The NZSG Access Committee also evaluates proposals for this access.

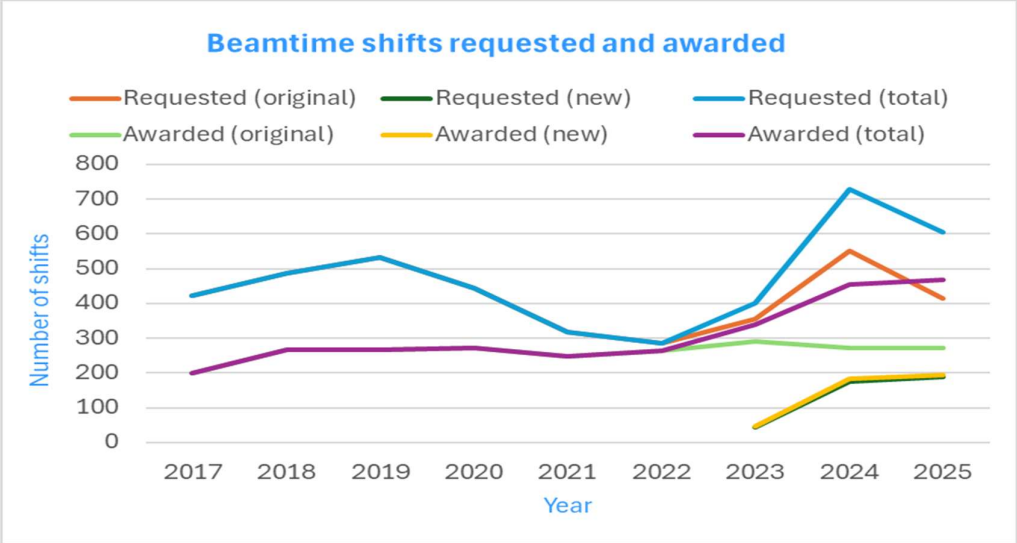
The ANSTO Program Advisory Committees assess proposals for merit access to the new beamlines. Although the NZSG Access Committee does not evaluate them, a proposal can be considered for preferred access in parallel with ANSTO's evaluation. This provides scope to maximise the number of successful New Zealand proposals.

Use of the Australian Synchrotron by New Zealand researchers

Demand for, and use of, the Australian Synchrotron by New Zealand researchers continues to exceed the amount of time available. New Zealand researchers are entitled to 267 shifts of merit access on the original beamlines annually, approximately 6.6% of the available time.

It is expected that demand will continue to grow as the last of the new beamlines come into operation by late 2026, especially as new types of experiments will be possible, attracting a wider pool of researchers.

Figure 1: Beamtime demand. Shifts requested and awarded on the original beamlines in the last eight years, and on the new beamlines over the last two years.



During the past year, 73% of proposals for merit time on the original beamlines were successful, and they were awarded 68% of the beamtime requested (Table 2). On average, applications requested 9.4 shifts (75 hours) of time. The XAS beamline was heavily oversubscribed during the year to the extent that ANSTO would not accept new applications for the 2025/2 period.

Table 2: Success rates of proposals by New Zealand researchers for use of the original beamlines 2024/2025.

Beamline[3]	Shifts requested	Shifts awarded	% success	Proposals received	Awarded beamtime	% success
Imaging and medical (IM)	12	12	100%	1	1	100%
Infrared microscope (IRM)[4]	69	45	65%	6	4	67%
Powder diffraction (PD)	22	16	73%	5	4	80%
Small- and wide angle X-ray scattering (SAXS/WAXS)	18	18	100%	5	4	80%
Soft X-ray absorption spectroscopy (SXR)	48	27	56%	4	3	75%
FTIR spectrometer (THz)	18	24	133%	2	2	100%
X-ray absorption spectroscopy (XAS)	63	27	43%	9	4	44%
X-ray fluorescence microspectroscopy (XFM)	33	21	64%	5	3	60%
Subtotal	**283**	**190**	**67%**	**37**	**25**	**68%**
Macromolecular crystallography MX (CAPs)[5]	132	91	69%	7	7	100%
Total	**415**	**281**	**68%**	**44**	**32**	**73%**

Demand for time on the new beamlines was also strong. During the past year 93% of all proposals submitted received beamtime and New Zealand's full entitlement to preferred access time was allocated (Table 3). More shifts were allocated than requested on the BSX beamline so that there was sufficient time to undertake the proposed experiments.

The full benefit of investing in the new beamlines has yet to be realised, as only four of the eight new beamlines were operational during the year. Nevertheless, the impact on the total amount of beamtime requested and used is significant (Figure 1). Nearly 40% of all requests are for the new beamlines (Tables 2 & 3).

[3] Descriptions of the beamlines and their applications are provided in the *Australian Synchrotron* section.

[4] The infrared spectroscopy (IR) beamline features two end stations: an FTIR spectrometer (THz) and an infrared microscope (IRM). They are reported separately here.

[5] As the MX1 and MX2 beamlines offer similar functionality, researchers apply for a pool of access to both beamlines, MX (CAPs), which is then allocated by NZSG.

Table 3: Success rates of proposals by New Zealand researchers for use of the new beamlines 2024/2025.

Beamline	Shifts requested	Shifts awarded	% success	Proposals received	Awarded beamtime	% success
Biological small-angle X-ray scattering (BioSAXS)	66	87	132%	13	13	100%
Micro-computed tomography (MCT)	57	57	100%	8	8	100%
Medium energy X-ray absorption spectroscopy (MEX1)	57	42	74%	6	4	100%
Medium energy X-ray absorption spectroscopy (MEX2)	9	9	100%	2	2	100%
Total	**189**	**195**	**103%**	**29**	**27**	**93%**

Additional support for students

The New Zealand Synchrotron Group provides support for students to attend the annual User Meeting held at the Australian Synchrotron, and the annual Synchrotron Radiation School run by the Asia Oceania Forum for Synchrotron Radiation Research (AOFSRR), of which NZSG is a member. Both events give the recipients opportunities to further enhance their knowledge of synchrotron science and meet a wide range of researchers from throughout the region.

Travel funding enabled four students to attend the most recent User Meeting, held in November 2024. Four students, Kiersten Kneisel (Victoria University of Wellington), Jeremy Stockdill (University of Canterbury), Benjamin Krinkel (University of Auckland) and Shaneen Mills (Massey University) were also selected to attend the AOF Synchrotron Radiation School at the Australian Synchrotron in Melbourne in August 2024. Science and engineering graduate students and early career researchers from the entire Asia-Oceania region attend the school. The school offers a programme of seminars on the application of synchrotron science, together with practical sessions on how specific beamlines can be applied to a wide range of research.

In addition, groups that have been successful in obtaining beamtime are offered travel grants to take additional students to Melbourne who have not been to the Australian Synchrotron previously to gain an understanding of large-scale research infrastructure. Thirteen students were awarded these travel grants during the year.

Conclusion

This year has been another satisfying period for the NZSG and for New Zealand synchrotron science. The Australian Synchrotron is one of the best in the world. New Zealand's partnership contributes to the capability of our science community to deliver world-class research, now and in the future.

Access to the Australian Synchrotron provides significant benefits to New Zealand researchers. The facility is the only one of its kind in Oceania and is the largest stand-alone scientific infrastructure in the southern hemisphere. With a sound science partnership between our two countries, Aotearoa New Zealand has access to all the benefits of this world class facility. The NZSG looks

forward to the completion of the new beamlines and the additional science achievements that they will enable.

Despite many major achievements, we are yet to reap the full rewards of synchrotron science, and enabling access by more researchers will lead to long-term benefits for the research community, and Aotearoa New Zealand.

D K W Smith

Executive Officer
Secretariat

PREPARING FOR THE FUTURE

The current funding arrangements that allow access to the Australian Synchrotron cease on 30 June 2026. Securing future funding and negotiating access arrangements will be managed in tandem by NZSG over the coming year to ensure the best outcomes for the New Zealand research community. Directors expect that the company will be able to function normally and deliver the usual range of support offered to the research sector during the remainder of the current contract.

Access to the new beamlines at the Synchrotron for the first five years of their operation is already provided for under the current arrangement, but new agreements are needed for ongoing access to the original beamlines and to each of the new beamlines as they reach their five-year operating milestone. While NZSG is proposing that the funding model for the next 5 years will be similar to the current model, we are exploring options to provide access for small or infrequent users. The amalgamation of the CRIs into the new PROs also provides an opportunity to increase the spread of researchers who could benefit from use the techniques available at the Synchrotron as more researchers will belong to organisations that have access.

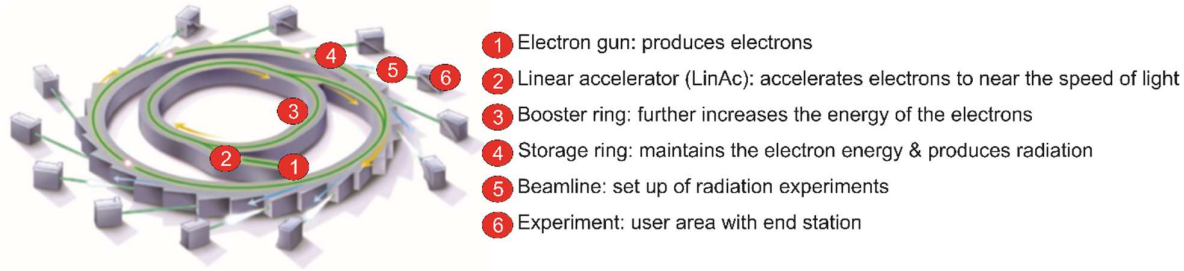
Continued financial support from the government has been secured for the next five years, subject to the research sector providing matching funding. Negotiations have been held with ANSTO and an understanding of the nature and scope of a future access arrangement has been developed.

Shareholders have been presented with a prospectus that outlines a collective funding approach to the research sector's share of the cost of continued access. Directors are confident that agreements will be in place by early next year so that access to the Synchrotron can continue uninterrupted.

THE AUSTRALIAN SYNCHROTRON

A synchrotron is a cyclic particle accelerator that generates an extremely intense beam of electromagnetic radiation that can be used for scientific experiments. The light is channelled down several 'beamlines', each optimised for a specific technique, which are grouped into three broad categories: diffraction (and scattering), spectroscopy and imaging.

How synchrotrons work



Above: Electrons are produced an electron gun (1) and accelerated in the linear accelerator (LinAc), (2). The electrons then progress into the smaller 'booster' ring (3), where they are further accelerated to their final velocity (99.99% of the speed of light, a kinetic energy of 3.0 GeV). At this point they are 'injected' into the larger storage ring (4), where they circulate for a period of hours to days. The electron beam is steered and focused by magnetic fields. At each point where the beam is deflected, electromagnetic radiation is produced tangential to the beam path. 'Insertion devices', undulators and wigglers, are periodic magnet structures that increase the radiation flux by up to five orders of magnitude. The radiation produced can be used in many different types of techniques and applications. The light is channelled from the ring down several 'beamlines' (5), each of which is optimised for a particular technique and controlled via experimental 'hutches' with end stations (6).

Australian Synchrotron beamlines and their applications

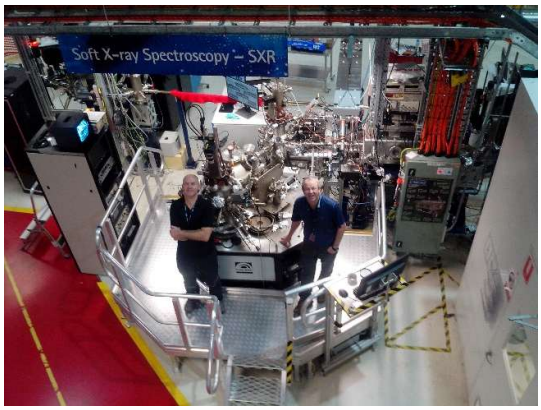
The Australian Synchrotron has 14 beamlines, 10 of which have been operating for some time and four that commenced operations in the past three years. A further four are under construction and will be available for users progressively from mid 2025.

Original beamlines

- **Macromolecular crystallography (MX1)** was the first operational beamline and began accepting general users in January 2008. This technique uses X-ray diffraction to determine the structure of proteins and is used in drug design and understanding biochemical interactions.
- **Infrared spectroscopy and microscopy (IR)** also came online in early 2008. The beamline features two end stations: an FTIR spectrometer (THz) and an infrared microscope (IRM). The beamline is ideally suited to the analysis of microscopic samples, such as small particles and thin layers within complex matrices, or thin coatings on surfaces.
- **Powder diffraction (PD)** began taking general users in February 2008 and was fully operational by May 2008. This beamline is a general-purpose diffraction beamline with

several sample environments for observing changes in materials structure as a function of temperature, pressure, time, or other environmental conditions.

- The **soft X-ray absorption spectroscopy (SXR)** beamline was available for general users from late 2008. It operates at low X-ray energies and is most useful for surface studies. Right: the soft X-ray spectroscopy (SXR)beamline.



- The **X-ray absorption spectroscopy (XAS)** beamline became available to general users from January 2009. This technique is useful for probing elemental valence states and determining the local structure around an atomic species of interest.
- **Small-angle X-ray scattering**, combined with **wide-angle X-ray scattering (SAXS/WAXS)** is a useful technique for determining large scale (1-100 nm), short-range order in materials. This beamline came online at the beginning of 2009.
- The commissioning of the second **macromolecular crystallography (MX2)** beamline was completed in mid-2009. It complements the original MX1 crystallography beamline and can measure micron-sized crystals and other weakly-scattering or hard to crystallise systems.
- The **X-ray fluorescence microspectroscopy (XFM)** beamline was also completed in early 2009. This beamline combines the high spatial resolution of a microscope with the information that can be gleaned through X-ray fluorescence spectroscopy.
- The **imaging and medical (IM)** beamline was available from 2013. It was redesigned from its original concept to include a 150 m long enclosure which extends well outside the Synchrotron building. It has the world's widest X-ray beam and can provide dynamic 3D X-ray imaging at very high resolution. In addition to its medical applications, it has been used by geoscientists for tomography studies.

New operational beamlines

- The new **micro-computed tomography (MCT)** beamline commenced user operations in September 2022. Micro-computed tomography opens a window on the micron-scale 3D structure of a wide range of samples relevant to many areas, including life sciences, materials engineering, anthropology, palaeontology and geology. The beamline delivers high-throughput and dynamic micro-CT down to submicron resolution. A key feature is the speed of data collection, for both applications where many samples are imaged, and experiments where a single specimen is imaged many times to observe dynamic responses to temperature, pressure, strain or other changing environmental conditions.
- The two new **medium energy X-ray absorption spectroscopy (MEX1 and MEX2)** beamlines commenced operation in November 2022 and April 2023 respectively. Two independently operated end-stations provide medium energy absorption spectroscopy optimised for cutting-edge applications in biological, agricultural and environmental

science. They cover an energy range not previously available to Australian and New Zealand researchers, allowing X-ray absorption spectroscopy measurements of very important elements such as sulphur, phosphorus, silicon and chlorine. Applications include environmental studies of inorganic, organophosphate and organochlorine pollutants, water pollution, plant growth, micro-nutrient transport and soil salinity, as well as studies of biomineralisation.

- The new **biological small angle X-ray scattering (BioSAXS)** beamline commenced user operations in March 2024. It was specifically designed for structural biology and has equal or better specifications than the current SAXS/WAXS beamline, combined with specialised facilities for protein work, giving scientists and industry unprecedented access to the most sophisticated tools available.

Applications of the BioSAXS include better resolution in the study of the structure of larger biomedical molecules involved in the critical functions of human cells, such as proteins and the nucleic acids that comprise the genetic material, and the study of interactions between biological molecules and new drugs.

New beamlines under construction

Prior to COVID, all the new beamlines were on track to be completed on time. However, shutdowns in Melbourne from early 2020 resulted in the periodic closure of the Australian Synchrotron. Similar shutdowns in Europe where important components were being manufactured also caused delays.

During that period there were restrictions on people entering Australia which affected equipment installation and more recently the cancellation of a contract to source an insertion device from Russia and securing an alternative has further complicated construction plans. There have also been delays caused by the backlog of work at the radiation regulatory agency ARPANZA/

The net effect is that the first four beamlines were about 9 months behind the original completion date and the remaining four beamlines will be 18-24 months late.

High performance macromolecular crystallography (MX3)

Available: June 2025

This ultra-high flux micro-focus macromolecular crystallography beamline is intended for small and/or poorly diffracting samples. The most important targets for the design of novel drugs include difficult large assemblies, which rarely produce crystals of sufficient size for analysis using traditional macro or micro-molecular crystallography beamlines. The MX3 beamline will enable the study of sub-5μm crystals, providing a state-of-the-art high-throughput facility for researchers to study very small, weakly diffracting crystals of protein fragments and solution studies of protein fragments.

Applications include in-membrane proteins and receptors; virology; and materials science. The beamline will take advantage of the latest developments in high-throughput crystallography, including robot handling of 96-well crystallisation plates.

Advanced diffraction and scattering (ADS1 and AD2)

Expected availability: ADS1 Sep 2026 & ADS2 Nov 2026

The ADS beamline will also have two independent end-stations providing capabilities previously unavailable in Australasia with two high energy beamlines for polychromatic and monochromatic X-ray diffraction and imaging. Applications include studies of mineral formation and recovery under extreme conditions of temperature and pressure; non-destructive detection of cracking, fractures, textures, strains and deformations in large, manufactured objects across the energy, automotive, transport, defence and aerospace sectors; maintenance and component failure studies of engineering infrastructure; and studies of corrosion and cracking in aluminium alloys used in aircraft and marine platforms

X-ray fluorescence nanoprobe (NANO)

Expected availability: Oct 2026

The multimodal nanoprobe beamline will be optimised for fluorescence detection, allowing the mapping of metals inside samples with extremely high resolution and sensitivity. It will have three operating modes: high resolution mapping (80 nm), high-flux mapping (160 nm resolution) and spectroscopy (160 nm resolution).

The nanoprobe is useful for a range of applications in physics, chemistry, biology, nutrition and health, geosciences, engineering, environmental research, soil science, agriculture, cultural heritage, and materials science.

Above: the Australian Synchrotron facility

History of the Australia/New Zealand Synchrotron partnership

The Australian Synchrotron has become an essential tool for many researchers and has deepened a strong and mutually beneficial partnership with Australian scientists. Moreover, New Zealand's partnership with the Australian Synchrotron more broadly enhances science infrastructure in the Australasia region.

In 2006 the Victorian State government invited New Zealand to contribute to construction of beamlines at the newly built synchrotron facility in Melbourne. This contribution was jointly funded by a consortium of Universities and CRIs and a substantial capital grant from the New Zealand government (a 50:50 split), who could see the benefits of synchrotron science. The consortium formed NZSG to hold shares in the synchrotron on their behalf, represent them in governance matters, manage access to the facility, and promote synchrotron science to researchers.[6]

The New Zealand Synchrotron Group was one of ten foundation investors, each of whom has contributed A$5 million towards the initial suite of beamlines. This investment secured preferred (as-of-right) access for each foundation investor, spread over all the beamlines, in addition to

[6] In addition to the government of the State of Victoria, consortia representing Australian research groups also became shareholders.

unrestricted access to the merit beamtime pool. The preferred access arrangements for foundation investors ceased in August 2013.

To keep pace with the rest of the world, a beamline expansion programme, BRIGHT, was initiated. Contributing institutions, including New Zealand via NZSG, have exclusive access to these new beamlines for five years. Again, this demonstrates the benefit of the partnership to New Zealand. New Zealand invested in these beamlines knowing the full benefit would accrue after 2026. The new beamlines add significant capacity and new capability to the Australian Synchrotron.

New Zealand agreed to make an annual payment of A$1.5 million (plus CPI adjustment) towards the cost of access and contribute A$12 million towards the cost of the new beamlines. Access and capital costs are equally shared by the New Zealand research sector and the government. The government's A$6 million contribution was paid to ANSTO during the 2017/18 financial year. The sector's share was paid in five instalments, the last of which was made in 2022/23.

Due to New Zealand's contribution to funding of the new beamlines and the ongoing operations of the Synchrotron, an increase in the amount of merit beamtime was secured for New Zealand researchers. Access to the original ten beamlines increased from 201 shifts to 267 shifts per year.

In addition, proportionate rights to the merit and preferred access shifts to the new beamlines were secured. The agreement expires in June 2026. The agreement also guaranteed that the new BioSAXS beamline, which has capability of particular interest to New Zealand researchers, would be one of the first beamlines to be added to the facility.

The New Zealand research community has been a significant partner in the Australian Synchrotron since its inception in 2007. The Synchrotron is overseen by a Stakeholders Committee that monitors operations, budget and development and provides advice to ANSTO. New Zealand, as the largest single contributor towards the cost of the new beamlines and a significant user group, is a key stakeholder.

The NZSG board appointed its Executive Officer, Dr Don Smith, as the company's representative on the Stakeholders Committee. Dr Smith is also the contact person for day-to-day matters associated with access arrangements and user liaison with ANSTO.

The ANSTO and NZSG agreed to reduce the annual contribution towards the Synchrotron's operating costs for three years from 2020/21 to assist with cash flow during the COVID pandemic. Now that the payments towards the new beamlines have ceased, the annual operating cost payment has been increased for the final three years of the funding and access agreement so that the full amount will be paid.

By virtue of their participation in the joint funding arrangement with the government, researchers and students from the Universities of Auckland, Canterbury, Otago and Waikato, Auckland University of Technology, Massey University, Victoria University of Wellington and the Bioeconomy Science Institute are eligible to apply for subsidised merit beamtime on the Australian Synchrotron. Researchers from other organisations can apply for commercial access with assistance from NZSG. The New Zealand Synchrotron Group would like more of our researchers have access to this remarkable asset.

CORPORATE GOVERNANCE

Board composition

The company operates with a board comprising up to five directors, including an independent Chair. Professor Jim Metson retired in November 2024. Professor Roger Reeves and Professor Geoffrey Waterhouse were appointed to the Board in November 2024.

The Directors during the period 1 July 2023 to 30 June 2024 were:

- Professor Brett Cowan, Auckland University of Technology, Chair
- Professor Catherine Day, University of Otago
- Emeritus Professor Geoffrey Jameson, Massey University
- Professor James Metson, The University of Auckland (retired on 22 November 2024)
- Professor Roger Reeves, University of Canterbury (appointed 22 November 2024)
- Professor Geoffrey Waterhouse, The University of Auckland (appointed 26 November 2024

Indemnities and insurance

The board has taken Directors and Officers Liability Insurance of up to $6 million with New Zealand Insurance.

Attendance at Board meetings

The following table shows the attendance at meetings of the board for each director and the fees paid.

Director	**Meetings held during the year**	**Meetings attended**	**Fees paid**
Professor Brett Cowan	7	7	$9,000
Professor Catherine Day	7	7	-
Emeritus Professor Geoffrey Jameson	7	7	-
Professor James Metson	3	3	-
Professor Roger Reeves	5	5	-
Professor Geoffey Waterhouse	4	4	-

Donations

The company did not make any donations during the period from establishment up to 30 June 2025.

Interests register

During the course of its normal business activities to support the development of synchrotron science, the company provides assistance towards the travel costs for research staff from its shareholders. The practice at meetings of the board is for directors from organisations who are receiving financial support to declare an interest and to refrain from voting on relevant matters. The following significant entries relating to the directors were recorded in the Interests Register during the year.

Director	Organisation/Entity	Nature of Interest
Professor BR Cowan		
Offices held	Auckland University of Technology	Pro Vice-Chancellor and Dean
	Health Research Council	Council Member
	Cowan Consulting Ltd	Director and shareholder
	Jatby Investments Ltd	Director and shareholder
	Matai Medical Research Institute	Trustee
	Atanga Trust	Trustee
Other	Financial Markets Authority	Daughter (Jenika Phipps) has a lead role in sustainability reporting
Professor CL Day		
Offices held	University of Otago	Employee
	Maurice Wilkins CoRE	Member - AI
	Australian Synchrotron Science Advisory Committee	Member
Shares held	Fairholm Farming Ltd	Director and shareholder
Emeritus Prof GB Jameson		
Shares held	Tower Ltd	Minority shareholder
Offices held	Massey University	Emeritus Professor
	Asian Crystallographic Association	Vice-President
Other interests	Te Manawa Museums Trust Board	Board member
	Science Centre Trust, Palmerston North	Chair
	Riddett Institute	Member - PI
	MacDiarmid Institute	Member - AI
	Maurice Wilkins Centre	Member - AI
Prof JB Metson		
Shares held	Vector Energy	Minority shareholder
Offices held	University of Auckland	Strategic Advisor Newmarket Campus
	Dodd Walls Centre	Board Member
	Ngā Pae o te Maramatanga	Board Member
	Te Titoki Mataroa	Board Member
	Riddet Institute	Board Member
	Research and Education Advanced Network New Zealand (REANNZ)	Director
	Rotary Science & Technology Forum Trust	Member
Prof RJ Reeves		
Offices held	University of Canterbury	Employee and Head of School
	MacDiarmid Institute	Member – EI
Prof GIN Waterhouse		
Offices held	University of Auckland	Employee

Director	Organisation/Entity	Nature of Interest
	MacDiarmid Institute	Member – PI

Annex 1: Publications by New Zealand researchers

New Zealand researchers published 52 peer-reviewed papers in the last year based on experiments on the Australian Synchrotron.

1. D. Nirosha T. De Silva, Tyson N. Dais, Geoffrey B. Jameson, Casey G. Davies, Guy N. L. Jameson, Paul G. Plieger. $[Fe(\mu_2\text{-}OH)_6]^{3-}$ Linked Fe_3O Triads: Mössbauer Evidence for Trigonal $\mu_3\text{-}O^{2-}$ or $\mu_3\text{-}OH^-$ Groups in Bridged versus Unbridged Complexes. *Molecules* **29**, 3218 (2024)
   DOI: 10.3390/molecules29133218

2. Phonlakrit Muang-Non, Meabh K. S. Perry-Britton, Lauren K. Macreadie, Nicholas G. White. A three-component hydrogen bonded framework. Chemical *Communications* **60**, 7582-7585 (2024)
   DOI: 10.1039/D4CC02265C

3. Liam Howard-Fabretto, Timothy J. Gorey, Guangjing Li, D. J. Osborn, Siriluck Tesana, Gregory F. Metha, Scott L. Anderson, Gunther G. Andersson. The interaction of size-selected Ru_3 clusters with TiO_2: depth-profiling of encapsulated clusters. *Physical Chemistry Chemical Physics* **26**, 19117-19129 (2024)
   DOI: 10.1039/D4CP00263F

4. Jenna M. Gilkes, Rebekah A. Frampton, Amanda J. Board, André O. Hudson, Thomas G. Price, Vanessa K. Morris, Deborah L. Crittenden, Andrew C. Muscroft-Taylor, Campbell R. Sheen, Grant R. Smith, Renwick C. J. Dobson. A new lysine biosynthetic enzyme from a bacterial endosymbiont shaped by genetic drift and genome reduction. *Protein Science* **33**, e5083 (2024)
   DOI: 10.1002/pro.5083

5. Johan Hamonnet, Sally Brooker, Vladimir Golovko, Aaron T. Marshall. Effect of loading and pyrolysis of carbon-supported cobalt phthalocyanine on the electrocatalytic reduction of CO_2. *Electrochimica Acta* **491**, 144332 (2024)
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   DOI: https://doi.org/10.1038/s41467-024-50791-2

7. Jannis N. Ahlers, Konstantin M. Pavlov, Marcus J. Kitchen, Kaye S. Morgan. X-ray dark-field via spectral propagation-based imaging. *Optica* **11**, 1182 (2024)
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8. Ray G. DiNardi, Samina Rasheed, Simona S. Capomolla, Man Him Chak, Isis A. Middleton, Lauren K. Macreadie, Jake P. Violi, William A. Donald, Paul J. Lusby, Jonathon E. Beves. Photoswitchable Catalysis by a Self-Assembled Molecular Cage. *Journal of the American Chemical Society* **146**, 21196-21202 (2024)
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12. Andrew J. Sutherland-Smith, Vincenzo Carbone, Linley R. Schofield, Bryan Cronin, Evert C. Duin, Ron S. Ronimus. The crystal structure of methanogen McrD, a methyl-coenzyme M reductase-associated protein. *FEBS Open Bio* **14**, 1222-1229 (2024) DOI: 10.1002/2211-5463.13848

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Annex 2: Beamtime awarded

Sixty-nine New Zealand research projects were awarded time at the Australian Synchrotron between July 2024 and June 2025. The value figure includes travel and sample shipping funding. The list of researchers includes the applicants (principal investigators), associate investigators, postdoctoral fellows and students.

Researchers	Institutions	Beamline / Cycle ***Project***	Access	Value
Prof Martin Allen Prof Roger Reeves Dr Adam Hyndman Ryan Adams Alex Barnes	Canterbury Canterbury Canterbury Canterbury Auckland	SXR / 2024-2 *Photoemission Spectroscopy and X-ray Adsorption Spectroscopy to investigate the effectiveness of sulfur treatments in tuning the surface electronic properties of SnO_2, ZnO, and Ga_2O_3*	Merit: 15 shifts 2-7 Jul	$4.480
Dr Samuel Yick Assoc Prof Tilo Soehnel Lanyi Chi	Auckland Auckland Auckland	PD / 2024-2	Rapid Access: 2 hr 3 Jul	$0
Dr Adam Hartland Dr Jeffrey Lang Dr Sebastian Hoepker	Waikato Waikato Waikato	XFM / 2024-2 *Testing a novel cave-based paleoseismic tool for New Zealand using past Alpine Fault earthquakes*	Paid Access: 6 shifts 9-11 Jul	$2,032
Assoc Prof Chris Squire Dr Ghader Bashiri Dr Richard Kingston Assoc Prof Shaun Lott Dr David Goldstone	Auckland Auckland Auckland Auckland Auckland	MX1 / 2024-2 *Auckland Structural Biology 2024 CAP Program*	Merit: 3 shifts 10-11 Jul	$4,054
Dr Matthew Cowan Dana Stone Harikrishnan Raghavan Sarah Morgan Mai Abdelmigeed Jimmy Nguyen Dr Thomas Bennett Gregory Parsons	Canterbury Canterbury Canterbury Canterbury Canterbury Canterbury Canterbury Canterbury	PD / 2024-2 *Tracking the conversion of ZnO to mixed-ligand zeolitic imidazolate frameworks (ZIFs) and ZIF melts for gas separation membranes*	Merit: 6 shifts 10-12 Jul	$2,218
Dr Grant Pearce Dr Jodie Johnston Prof Ren Dobson Dr Tim Allison Dr Christoph Goebl Dr Ali Nazmi Dr Vaneesa Morris Dr Fiona Given Jacob Hartshorn Irene Antony Adam Ireland	Canterbury Canterbury Canterbury Canterbury Canterbury Canterbury Canterbury Canterbury Canterbury Canterbury Canterbury	BSX / 2023-3 *University of Canterbury SAXS Proposal 2023/3*	Merit: 3 shifts 11-12 Jul	$1,921

Researchers	Institutions	Beamline / Cycle ***Project***	Access	Value
Dr Jodie Johnston Prof Ren Dobson Dr Michael Currie Dr Ngoc Ang Thu Ho Michelle Klein Dr Grant Pearce Dr Ali Reza Nazmi Dr Tim Allison Dr Fiona Given	Canterbury Canterbury Canterbury Canterbury Canterbury Canterbury Canterbury Canterbury Canterbury	BSX / 2024-1 *University of Canterbury: Protein Chemistry Collective Projects BioSAXS*	Merit: 6 shifts 12-14 Jul	$2,219
Dr Matthias Fellner Prof Kurt Krause Joel Tyndall Prof Catherine Day Dr Nathan Kenny Assoc Prof Peter Mace Dr Adam Middleton Prof Brian Monk Dr Daniel Pletzer	Otago Otago Otago Otago Otago Otago Otago Otago Otago	MX1 / 2024-2 *University of Otago Structural Biology Group*	Merit: 3 shifts 17-18 Jul	$12,057
Dr William Kelton Dr Adele Williamson	Waikato Waikato	BSX / 2024-1 *Human antibody dynamics and the temperature-dependent structural behaviour of extremophile DNA-repair enzymes*	Merit 3 shifts 17-18 Jul	$4,256
Dr Joanna Hicks Prof Geoff Jameson Prof Vic Arcus Prof Emily Parker Dr Gerd Mittelstaedt Florian de Pol Dong Luo Jack McGarvie Chloe Fleming	Waikato Massey Waikato VUW VUW VUW Massey Waikato Waikato	BSX / 2024/2 *Protein complexes and conformational change*	Merit: 6 shifts 19-21 Jul	$4,159
Prof Emily Parker Prof Geoff Jameson Dr David Comoletti Dr Vince Carbone Dr Andrew Sutherland-Smith Assoc Prof Wayne Patrick Adele Williamson Prof Vic Arcus Dr Joanna Hicks Dr Chelsea Vickers	VUW Massey VUW AgResearch Massey VUW Waikato Waikato Waikato VUW	MX1 / 2024-2 *Protein Structure and Function: AgResearch NZ, Ferrier Research Institute and Waikato, Victoria and Massey Universities*	Merit 3 shifts 20-21 Jul	$7,595
Prof Aaron Marshall Dr Chang Wu Gabriela Junk	Canterbury Canterbury Canterbury	PD / 2024-2 *Tracking the reductive phase transformation of zinc ferrites to leachable zinc oxide in industrial electric arc furnace dusts*	Merit: 6 shifts 23-25 Jul	$2,532
Assoc Prof Michael Rowe Prof Kathy Campbell Dr Andrew Langendam Dominique Stallard Barbara Lyon	Auckland Auckland Aust Synch Auckland Auckland	XFM / 2024-2 *Understanding the significance of trace metal biosignatures in hot springs silica deposits*	Merit: 9 shifts 26-29 Jul	$2,671

Researchers	Institutions	Beamline / Cycle *Project*	Access	Value
Prof Emily Parker Prof Geoff Jameson Dr Gerd Mittelstaedt Assoc Prof Davide Comoletti Florian de Pol Dong Luo Dr Bruce Chilton Thomas Bird	VUW Massey VUW VUW VUW Massey VUW VUW	BSX / 2024-2 *Protein complexes and conformational change*	Merit: 6 shifts 2-3 Aug	$2,700
Dr Matthias Fellner Prof Kurt Krause Joel Tyndall Prof Catherine Day Dr Nathan Kenny Assoc Prof Peter Mace Dr Adam Middleton Prof Brian Monk Dr Daniel Pletzer Helen Opel-Reading Dr Ashley Campbell Dr George Randall Haziq Anwar	Otago Otago Otago Otago Otago Otago Otago Otago Otago Otago Otago Otago Otago	MX2 / 2024-2	Merit: 2.5 shifts 2-3 Aug	With #8
Dr Fryderyk Lyzwa Hazel Hogan-Murphy Stanley Tang Alex Barnes Kane Hill Kiri van Houghnet	Auckland Auckland Auckland Auckland Auckland VUW	THz / 2024-1 *Cryogenic THz Reflectivity Measurements of Transition Metal(-Oxide) Thin Films*	Merit: 9 shifts 9-12 Aug	$2,666
A/Prof Chris Squire Dr Ghader Bashiri Dr Richard Kingston Assoc Prof Shaun Lott Dr David Goldstone	Auckland Auckland Auckland Auckland Auckland	MX2 / 2024-2 *Auckland Structural Biology 2024 CAP Program*	Merit: 2.5 shifts 12-13 Aug	With #4
Prof Ren Dobson Dr Grant Pearce David Wood Michael Newton-Vesty Dr Amanda Broad Gayan Abeysekera Irene Antony Dr Craig Billington Jacqui Ormsby	Canterbury Canterbury Canterbury Canterbury Canterbury Canterbury Canterbury ESR Canterbury	BSX / 2023-3 *Regulators, transporters and enzymes of the bacterial sialic acid pathway*	Merit: 3 shifts 15-16 Aug	$4,647
Dr Vanessa Morris Prof Ren Dobson Dr Jodie Johnston Dr Christoph Goebl Dr Grant Pearce Dr Tim Allison Dr Amy Yewdall Dr Ali Reza Nazmi Dr Fiona Given Sarah du Toit Moirangthem Singh	Canterbury Canterbury Canterbury Otago Canterbury Canterbury Canterbury Canterbury Canterbury Canterbury Canterbury	BSX / 2024-2 *University of Canterbury SAXS Proposal 2024/2*	Merit: 6 shifts 16-18 Aug	$1,600

Researchers	Institutions	Beamline / Cycle ***Project***	Access	Value
Dr Chang Wu Prof Aaron Marshall Dr Shailendra Sharma Dr Navid Erfani Sophie McArdle Dr Liangxu Lin	Canterbury Canterbury Canterbury Canterbury Canterbury Fujian Normal U.	XAS / 2024-2 *Use In-situ XAS to investigate the evolution of electronic structure in highly efficient and selective OER catalysts for seawater splitting*	Merit: 9 shifts 16-19 Aug	$2,869
Prof Emily Parker Prof Geoff Jameson Dr David Comoletti Dr Vince Carbone Dr Andrew Sutherland-Smith Assoc Prof Wayne Patrick Adele Williamson Prof Vic Arcus Dr Joanna Hicks Dr Chelsea Vickers	VUW Massey VUW AgResearch Massey VUW Waikato Waikato Waikato VUW	MX2 / 2024-2 *Protein Structure and Function: AgResearch NZ, Ferrier Institute and Waikato, Victoria and Massey Universities*	Merit: 2.5 shifts 18-19 Aug	With #11
Dr Chang Wu Prof Aaron Marshall Dr Shailendra Sharma Prof Liangxu Lin Campbell Tiffen	Canterbury Canterbury Canterbury Fujian U. Canterbury	THz / 2024-3 *Explore the formation mechanism of ultra-high loading Pt single atoms for HER*	Merit: 9 shifts 17-20 Sep	$2,384
Prof Geoff Waterhouse Dr Kai Sun Dr Yongfang Zhou Dr Ali Hosseni	Auckland Auckland Auckland Auckland	SXR / 2024-3 *NEXAFS characterisation of ultra-high-density M-N-C catalysts for the oxygen reduction reaction (ORR) and the oxygen evolution reaction (OER)*	Merit: 9 shifts 20-23 Sep	$2,900
Dr Ziyun Wang Dr Jiexin Zhu Zhanghao Ren Ruihu Lu Mengyao Chang	Auckland Auckland Auckland Auckland Auckland	MEX-1 / 2024-3 *Cobalt/copper tandem interface enables ultrahigh ethanol production from CO_2 electroreduction*	Pref. Access 9 shifts 26-29 Sep	$3,416
Prof Geoff Willmott Dr Nigel Kirby A/Prof Catherine Whitby Cynthia Adriani Dr Derek Knighton Dr Izabela Milogodzka Dr Brad Mansel Shikeale Harris	Auckland Aust Synch Massey Auckland Fonterra Aust Synch Fonterra Massey	SAXS / 2024-3 *Microstructural Dynamics of Milk Solutions: A Rheo-SAXS Study of Soft Colloids*	Merit: 6 shifts 2-4 Oct	$2,900
Dr Matthias Fellner Prof Kurt Krause Joel Tyndall Prof Catherine Day Dr Nathan Kenny Prof Peter Mace Dr Adam Middleton Prof Brian Monk Dr Daniel Pletzer Helen Opel-Reading Dr Ashley Campbell Dr George Randall Dr Fareeda Barzak	Otago Otago Otago Otago Otago Otago Otago Otago Otago Otago Otago Otago Otago	MX2 / 2024-3 *University of Otago Structural Biology Group*	Merit: 5 shifts 8-9 Oct and 21-22 Nov	$8,471

Researchers	Institutions	Beamline / Cycle ***Project***	Access	Value
Dr Alvaro Wehrle-Mendez Prof Keren Dittmer Assoc Prof Penny Black Dr Michaela Gibson Prof Chris Rogers Shannen Mills Sophie Marks	Massey Massy Massey Massey Massey Massey Massey	MCT / 2024-3 *Investigating/comparing the structure and biomechanical properties of bone humeral samples from cows affected with osteoporosis*	Merit: 6 shifts Pref.: 3 shifts 9-12 Oct	$5,386
Assoc Prof Chris Squire Dr Ghader Bashiri Dr Richard Kingston Assoc Prof Shaun Lott Dr David Goldstone Dr Sandesh Deshpande Chandra Rodriguez	Auckland Auckland Auckland Auckland Auckland Auckland Auckland	MX2 / 2024-3 *Auckland Structural Biology 2024 CAP Program*	Merit: 5 shifts 15-16 Oct and 20-21 Nov	$4,516
Joey Williamson	VUW	PD / 2024-3 Shifting crystal structures in $Co_{1-x}Ni_xMoO_4$	Rapid Access: 3 hr 22 Oct	$0
Prof Ren Dobson Dr Grant Pearce Michael Newton-Vesty Irene Antony Ashleigh Johns	Canterbury Canterbury Canterbury Canterbury Canterbury	BSX / 2024-3 *Regulators, transporters and enzymes of the bacterial sialic acid pathway*	Merit: 3 shifts 23-24 Oct	$2,270
Prof Emily Parker Prof Geoff Jameson Dr Gerd Mittelstaedt Assoc Prof Davide Comoletti Thomas Bird Florian De Pol Dr Bruce Chilton Dong Luo Thakshila Dayananda	VUW Massey VUW VUW VUW VUW Massey Massey Massey	BSX / 2024-3 *Protein complexes and conformational change*	Merit: 9 shifts 24-27 Oct	$3,250
Dr Matthias Fellner Prof Kurt Krause Joel Tyndall Prof Catherine Day Dr Nathan Kenny Assoc Prof Peter Mace Dr Adam Middleton Prof Brian Monk Dr Daniel Pletzer Helen Opel-Reading Dr Ashley Campbell Dr George Randall Dr Fareeda Barzak	Otago Otago Otago Otago Otago Otago Otago Otago Otago Otago Otago Otago Otago	MX1 / 2024-3 *University of Otago Structural Biology Group*	Merit: 3 shifts 26-27 Oct	With #26
Prof Tilo Soehnel Prof Peng Cao Dr Samuel Yick Dr Shanghai Wei Ryan Silk	Auckland Auckland Auckland Auckland Auckland	PD / 2024-3 *In-situ investigation of structural changes of Ru substituted Chevrel Phase cathodes in rechargeable Mg-ion batteries during cycling*	Merit: 9 shifts 29 Oct- 1 Nov	$2,914

Researchers	Institutions	Beamline / Cycle ***Project***	Access	Value
Prof Emily Parker Prof Geoff Jameson Dr David Comoletti Dr Vince Carbone Dr Andrew Sutherland-Smith Assoc Prof Wayne Patrick Adele Williamson Prof Vic Arcus Dr Joanna Hicks Dr Chelsea Vickers Megan Rousseau Olivia Macrae	VUW Massey VUW AgResearch Massey VUW Waikato Waikato Waikato VUW Waikato VUW	MX2 / 2024-3 *Protein Structure and Function: AgResearch NZ, Ferrier Research Institute and Waikato, Victoria and Massey Universities*	Merit: 5 shifts 31 Oct-1 Nov and 22-23 Nov	$6,874
Dr Jamie Taka Assoc Prof Ghader Bashiri Dr Richard Kingston Assoc Prof Shaun Lott Ishana Ratti Dr David Goldstone Stephanie Dawes Daniel Body Dr Matthew Sullivan Laura Walsham	Auckland Auckland Auckland Auckland Auckland Auckland Auckland Auckland Auckland Auckland	BSX / 2024-3 *Solution investigation of proteins with biomedical significance*	Pref. Access: 6 shifts 31 Oct-2 Nov	$2,473
Assoc Prof Alex Nichols Prof Ben Kennedy Brianna Kirkham Kirsten Lewis Henry Hoult	Canterbury Canterbury Canterbury Canterbury Canterbury	IRM / 2024-3 *Estimating shallow magma body depths from volatiles dissolved in glass recovered during drilling at the Puna Geothermal Venture wellfield, Hawaii*	Merit: 12 shifts 7-11 Nov	$2,810
Dr Kai Sun Prof Geoff Waterhouse Dr Yongfang Zhou Dr Ziyun Wang Dr Mengyao Chen	Auckland Auckland Auckland Auckland Auckland	MEX-1 / 2024-3 *Probing the local structure of transition metal P-block oxides during the oxygen evolution reaction and two-electron oxygen reduction reaction*	Pref. Access: 9 shifts 8-11 Nov	$2,863
Prof Emily Parker *Prof Geoff Jameson* *Dr David Comoletti* *Dr Vince Carbone* *Dr Andrew Sutherland-Smith* *Assoc Prof Wayne Patrick* *Adele Williamson* *Prof Vic Arcus* *Dr Joanna Hicks* *Dr Chelsea Vickers*	VUW Massey VUW AgResearch Massey VUW Waikato Waikato Waikato VUW	MX1 / 2024-3 *Protein Structure and Function: AgResearch NZ, Ferrier Research Institute and Waikato, Victoria and Massey Universities*	Merit: 3 shifts 12-13 Nov	With #34
Prof Christian Hartinger Prof Hugh Harris Dr Matthew Sullivan Tasha Steel James Lovett Hugh Bloomfield Anne Dill	Auckland U. Adelaide Auckland Auckland U. Adelaide Auckland Auckland	XAS / 2024-3 *Metabolism of mono- and bimetallic anticancer agents with high antiproliferative activity*	Merit: 9 shifts 14-17 Nov	$1,617

Researchers	Institutions	Beamline / Cycle ***Project***	Access	Value
Dr Adele Williamson Dr Joanna Hicks Dr William Kelton Alexandra Perry Dr Elizabeth Rzoska-Smith Marina Barcellos	Waikato Waikato Waikato Waikato Waikato Waikato	BSX / 2024-2 *Protein dynamics for new inhibitors and thereputics*	Merit: 3 shifts 20-21 Nov	$2,745
Dr Alexander Elliott Prof Duncan McGillivray Dr Cherie Tollemache	Auckland Auckland Auckland	SAXS / 2024-3 *Domain size control through annealing of a surfactant encapsulated POM monolayer*	Merit: 3 shifts 26-27 Nov	$1,469
Dr Samuel Yick Assoc Prof Tilo Soehnel Marco Vas Branwen Hastings Dr Mohammed Abdelbassit	Auckland Auckland Auckland Auckland Auckland	PD / 2024-3 *Detailed investigation of the crystal structure in the non-centrosymmetric material Cu_2OSeO_3 upon dual doping with Zn and Te*	Rapid Access: 3 hr 27 Nov	$0
Dr Joali Parades-Mariño Dr Shane Rooyakkers Prof Shane Cronin David Adams	Auckland GNS Science Auckland Auckland	MCT / 2025-1 *Characterizing submarine deposits to uncover magma fragmentation processes (vesiculation, crystallization, and outgassing) during the Hunga eruption, 15 January 2022*	Merit: 9 shifts 6-9 Feb	$2,136
Prof Aiqian Ye Prof Mark Waterland Di Liu Dr Cushla McGoverin Dr Jitraporn Vongsvivut	Massey Massey Massey Auckland Aust Synch	IRM / 2025-1 *Investigating the spatial and microstructural distribution of plant protein, rennet casein and lipid in hybrid processed cheese products using synchrotron macro ATR-FTIR microspectroscopy*	Merit: 12 shifts 11-15 Feb	$3,841
Prof Emily Parker Prof Geoff Jameson A/Prof Davide Comoletti Dr Vince Carbone A/Prof Andrew Sutherland-Smith Prof Wayne Patrick Dr Adele Williamson Prof Vic Arcus Dr Joanna Hicks Dr Chelsea Vickers Alexandra Perry Meghan Rousseau Dr Gerd Mittelstaedt Sarah Douglas	VUW Massey VUW AgResearch Massey VUW Waikato Waikato Waikato VUW Waikato Waikato VUW VUW	MX2 / 2025-1 *Protein Structure and Function: AgResearch NZ, Ferrier Research Institute and Waikato, Victoria and Massey Universities*	Merit: 5 shifts 14-15 Feb and 2-3 Apr	$4,753
Prof Geoff Waterhouse Dr Kai Sun Dr Yongfang Zhou Wenke Xie Zihe Wang	Auckland Auckland Auckland Auckland Auckland	SXR / 2025-1 *NEXAFS characterisation of ultra-high-density M-N-C catalysts for the oxygen reduction reaction (ORR) and the oxygen evolution reaction (OER)*	Merit: 9 shifts 20-23 Feb	$2,900

Researchers	Institutions	Beamline / Cycle ***Project***	Access	Value
Assoc Prof Chris Squire Dr Ghader Bashiri Dr Richard Kingston Assoc Prof Shaun Lott Dr David Goldstone Ben Krinkel	Auckland Auckland Auckland Auckland Auckland Auckland	MX2 / 2025-1 *Auckland Structural Biology 2025 CAP Program*	Merit: 5 shifts 20-21 Feb and 11-12 Apr	$4,494
Dr Matthias Fellner Prof Kurt Krause Prof Joel Tyndall Prof Catherine Day Dr Nathan Kenny Prof Peter Mace Dr Adam Middleton Prof Brian Monk Dr Daniel Pletzer	Otago Otago Otago Otago Otago Otago Otago Otago Otago	MX1 / 2025-1 *University of Otago Structural Biology Group*	Merit: 3 shifts 25-26 Feb	$12,057
Prof Aaron Marshall Dr Shailendra Sharma Campbell Tiffen Laura Titheridge Dr Kim McKelvey	Canterbury Canterbury Canterbury Canterbury VUW	IRM / 2025-1 Probing Electrochemical CO_2 Reduction with Infrared Micro-spectroscopy	Merit: 9 shifts 26 Feb- 1 Mar	$2,742
A/Prof Gabor Kereszturi Prof Jonathan Procter Maia Kidd Dr Shaneen Mills Prof Michael Heap Prof Ben Kennedy Juliette Vincente	Massey Massey Massey Massey U Strasbourg Canterbury Massey	MCT / 2025-1 *Alteration-induced rock fracturing or fracture-induced alteration? – Addressing the enigmatic questions via MCT combined with triaxial deformation experiments*	Merit: 9 shifts 28 Feb- 2 Mar	$3,885
Dr Ziyun Wang Dr Bernt Johannessen Ruihu Lu Mengyao Chang Shijia Li Zhanghao Ren Xingbao Chen	Auckland Aust Synch Auckland Auckland Auckland Auckland Auckland	XAS / 2025-1 *Tuning of Phenanthrene-quinone for the enhanced selectivity in CO_2 reduction towards Ethylene*	Merit: 6 shifts 4-6 Mar	$3,422
Prof Shane Cronin Dr Joali Parades-Mariño Mila Huebsch Jay Kuethe Soenke Stern Annhalise Hall Bastian Steinke Saad Al Sulaimi	Auckland Auckland Auckland Auckland Auckland Auckland Auckland Auckland	MCT / 2025-1 *Physio-chemical indicators of explosive subaerial to submarine transitions for extreme climate-impacting volcanic eruptions: Part1 physical*	Merit: 9 shifts 4-7 Mar	$5,788
Prof Emily Parker Prof Geoff Jameson A/Prof Davide Comoletti Dr Vince Carbone A/Prof Andrew Sutherland-Smith Prof Wayne Patrick Dr Adele Williamson Prof Vic Arcus Dr Joanna Hicks Dr Chelsea Vickers	VUW Massey VUW AgResearch Massey VUW Waikato Waikato Waikato VUW	MX1 / 2025-1 *Protein Structure and Function: AgResearch NZ, Ferrier Research Institute and Waikato, Victoria and Massey Universities*	Merit: 3 shifts 9-10 Mar	With #45

Researchers	Institutions	Beamline / Cycle ***Project***	Access	Value
Dr Ziyun Wang Zhanghao Ren Xingbao Chen Ruihu Lu Mengyao Chang Shijia Li	Auckland Auckland Auckland Auckland Auckland Auckland	MEX-1 / 2025-1 *Fe_2M (Fe, Co, Ni, Cu, Zn) catalysts for durable and active catalyzing ORR*	Merit: 9 shifts 14-17 Mar	$2,800
Dr Matthias Fellner Prof Kurt Krause Prof Joel Tyndall Prof Catherine Day Dr Nathan Kenny Prof Peter Mace Dr Adam Middleton Prof Brian Monk Dr Daniel Pletzer Xiangyan You Yoann Marjolet	Otago Otago Otago Otago Otago Otago Otago Otago Otago Otago Otago	MX2 / 2025-1 *University of Otago Structural Biology Group*	Merit: 5 shifts 14-15 Mar and 25-26 Apr	With #48
Dr Matthias Fellner Dr Ashish Sethi Dr Annmaree Warrender Dr George Randall Xiangyan You Yoann Marjolet	Otago Aust Synch Aust Synch Otago Otago Otago	BSX / 2025-1 *University of Otago Structural Biology Group BioSAXS*	Merit: 9 shifts 26-29 Mar	$2,379
Assoc Prof Chris Squire Dr Ghader Bashiri Dr Richard Kingston Assoc Prof Shaun Lott Dr David Goldstone Lorna Lu	Auckland Auckland Auckland Auckland Auckland Auckland	MX1 / 2025-1 *Auckland Structural Biology 2025 CAP Program*	Merit: 3 shifts 27-28 Mar	With #47
Dr Daniel Sinclair Prof Andrea Borsato Gavin Holden	VUW U Newcastle VUW	XFM / 2025-1 *Did sudden AMOC changes during the last Glacial period drive millennial-scale collapse of the South Pacific Convergence Zone?*	Merit and Paid Access: 9 shifts 3-6 Apr	$2,329
Prof Emily Parker Prof Geoff Jameson Dr Gerd Mittelstaedt Prof Vyacheslav Filichev Thomas Bird Hamish Dunham Dr Bruce Chilton Dr Elena Harjes Florian de Pol Dong Luo Thakshila Dayananda Ye Liu Dr Davide Comoletti Sarah Douglas	VUW Massey VUW Massey VUW VUW Massey Massey VUW Massey Massey ESR VUW VUW	BSX / 2025-1 *Protein complexes, aptamers and conformational change*	Merit: 9 shifts 3-6 Apr	$2,803
Dr Shailendra Sharma Prof Aaron Marshall Dr Chang Wu Laura Titheridge Campbell Tiffen Glen McClea	Canterbury Canterbury Canterbury Canterbury Canterbury Canterbury	XAS / 202-1 *Unravelling the Structure of Catalyst Coated Membranes Prepared by a Novel Direct Chemical Membrane Deposition Method*	Merit: 6 shifts 8-10 Apr	$2,655

Researchers	Institutions	Beamline / Cycle ***Project***	Access	Value
Dr Adele Williamson Dr Joanna Hicks Dr William Kelton Alexandra Perry Meghan Rousseau	Waikato Waikato Waikato Waikato Waikato	BSX / 2025-1 *Protein dynamics for new inhibitors and therapeutics*	Pref. Access: 6 shifts 9-11 Apr	$3,500
Dr Lucille Chapuis Prof Craig Radford Emily Leedham Jimmy Rapson Tillman Spellauge	Auckland* Auckland Auckland Auckland Auckland * Now at La Trobe Univ	MCT / 2025-1 *Hearing in invertebrates: first radiography and tomography of sound-induced motion in the statocyst organ*	Merit and Pref. Access: 9 shifts 24-27 Apr	$2,750
Prof Martin Allen Prof Roger Reeves Ryan Adams	Canterbury Canterbury Canterbury	MEX-2 / 2025-1 *Optimising the ability of sulfur treatments to modify the surface electronic properties of square SnO_2 nanostructures*	Pref. Access: 9 shifts 24-27 Apr	$0
Dr Yongfang Zhou Prof Geoff Waterhouse Dr Ziyun Wang Mengyao Chang Dr WenKe Xie	Auckland Auckland Auckland Auckland Auckland	MEX-1 / 2025-1 *Hierarchically-structured ZIF-derived Fe-N-C catalysts for oxygen reduction reaction*	Merit: 12 shifts 24-28 Apr	$2,900
Prof Daniel Holland Prof Aaron Marshall Dr Shailendra Sharma Campbell Tiffen Glen McClea Hemi Johnson	Canterbury Canterbury Canterbury Canterbury Canterbury Canterbury	IM / 2025-1 *How does the design of AEM water electrolysers influence the formation of gas bubbles?*	Merit: 12 shifts 24-28 Apr	$4,709
Dr Vanessa Morris Prof Ren Dobson Dr Jodie Johnston Dr Christoph Goebl Dr Grant Pearce Tim Allison Dr Amy Yewdall Dr Ali Reza Nazmi Dr Fiona Given Jovarn Sullivan Sarah du Toit Dr Robert Sharwood Jasmine Divinagracia	Canterbury Canterbury Canterbury Otago Canterbury Canterbury Canterbury Canterbury Canterbury Canterbury Canterbury West Syd. U. West Syd. U.	BSX / 2025-1 *University of Canterbury SAXS Proposal 2025/1*	Merit: 6 shifts 25-27 Apr	$3,155
Dr Gregory Giles Dr Adirah Coulter-Jeffrey	Otago Otago	IRM / 2025-2 *Live cell infrared imaging of manganese porphyrin cytotoxic action*	Merit: 12 shifts 21-25 May	$2,240
Assoc Prof Chris Squire Dr Ghader Bashiri Dr Richard Kingston Assoc Prof Shaun Lott Dr David Goldstone	Auckland Auckland Auckland Auckland Auckland	MX2 / 2025-2 *Auckland Structural Biology 2025 CAP Program*	Merit: 5 shifts 7-8 Jun and 12-13 Aug	$7,604

Researchers	Institutions	Beamline / Cycle ***Project***	Access	Value
Dr Matthias Fellner Prof Kurt Krause Prof Joel Tyndall Prof Catherine Day Dr Nathan Kenny Prof Peter Mace Dr Adam Middleton Prof Brian Monk Dr Daniel Pletzer Dr Helen Opel-Reading Dr Ashley Campbell Xiangyan You Yoann Marjolet Haziq Anwar	Otago Otago Otago Otago Otago Otago Otago Otago Otago Otago Otago Otago Otago Otago	MX1 / 2025-2 *University of Otago Structural Biology Group*	Merit: 3 shifts 11-12 Jun	$7,053
Dr Samuel Yick Prof Tilo Soehnel Marco Vas Branwen Hastings	Auckland Auckland Auckland Auckland	PD / 2025-2 *Investigating the effect of dual doping with Zn and Te on to the temperature distortion of the non-centrosymmetric material Cu_2OSeO_3*	Merit: 6 shifts 11-13 Jun	$2,749
Prof Aaron Marshall Dr Shailendra Sharma Campbell Tiffen Laura Tetheridge	Canterbury Canterbury Canterbury Canterbury	THz / 2025-2 *Investigating Copper Electrodes During Electrochemical CO_2 Reduction Using in-situ Far-IR Spectroscopy*	Merit: 15 shifts 17-22 Jun	$2,016
Prof Emily Parker Prof Geoff Jameson A/Prof Davide Comoletti Dr Vince Carbone A/Prof Andrew Sutherland-Smith Prof Wayne Patrick Dr Adele Williamson Prof Vic Arcus Dr Joanna Hicks Dr Chelsea Vickers	VUW Massey VUW AgResearch Massey VUW Waikato Waikato Waikato VUW	MX2 / 2025-2 *Protein Structure and Function: AgResearch NZ, Ferrier Research Institute and Waikato, Victoria and Massey Universities*	Merit: 5 shifts 24-25 Jun and 16-17 Aug	$6,368
Dr Yongfang Zhou Prof Geoff Waterhouse Dr Ziyun Wang Dr Haiyan Yin Mengyao Chang	Auckland Auckland Auckland Auckland Auckland	XAS / 2025-2 *Using In-situ XAS to reveal the outstanding performance of Ru atoms anchored on Co_3O_4 nanorods for pH-universal electrocatalytic water splitting (Mode 1)*	Merit: 6 shifts 24-26 Jun	$2,338

Researchers	Institutions	Beamline / Cycle ***Project***	Access	Value
Prof Emily Parker Prof Geoff Jameson Dr Gerd Mittelstaedt Prof Vyacheslav Filichev Florian de Pol Dr Elena Harjes Dr Hamish Dunham Dr Bruce Chilton Ye Liu Dong Luo Thakshila Dayananda A/Prof Davide Comoletti	VUW Massey VUW Massey VUW Massey VUW Massey ESR Massey Massey VUW	BSX / 2025-2 *Protein complexes, aptamers and conformational change*	Merit: 9 shifts 26-29 Jun	$2,645
Prof Richard Haverkamp Emma Gobes Olivia Buwalda Dr Eli Stuart-Gray Dr John Bronlund Dr Ali Reza Nazmi Jula Kniep	Massey Massey Massey Massey Fonterra Canterbury Canterbury	MCT / 2025-2 *Structure of collagen surgical scaffolds*	Pref. Access: 6 shifts 27-29 Jun	$4,559

New Zealand researchers collaborated on four Australian-led projects using the MX beamlines. All New Zealand researchers were from Canterbury University.

Researchers	Beamline / Cycle ***Project***	Access
Prof Paul Kruger Nathan Harvey-Reid Sydney Koia Chris Fitchett	MX2 / 2025-full year *Hybrid Ultramicroporous Materials*	Merit: MX2 1 shift various dates
Dr Tim Allison Michelle Klein Viet Anh Hoang Dr Ngoc Anh Thu Ho	MX2 / 2025 full year *Exposing the intricate interactions of membrane-associated bacterial machinery*	Merit: MX2 1 shift various dates
Dr Jodie Johnson Dr Fiona Given Dr Ngoc Anh Thu Ho Michelle Klein	MX2 / 2025-full year *Understanding Enzymes: Inhibition, Drug Discovery, Promiscuity, Allostery and Engineering Biocatalysts*	Merit: MX2 1 shift various dates
A/Prof Ren Dobson Dr Heather Shearer David Wood Mackenzie Aitken Ashleigh Johns Irene Antony Dr Michael Currie Michael Newton-Vesty Jovarn Sullivan Guyan Abeysekera	MX1 and MX2 / 2025-full year *Membrane transporters, Transcription factors, Fungal effector proteins, enzymes, and phage proteins.*	Merit: MX1 1 shift, MX2 2 shifts various dates

New Zealand Synchrotron Group Limited

Financial Statements

for the year ended 30 June 2025

Contents

		Page
Directory		3
Board report		4
Auditors' report		5-6
Statement of comprehensive revenue and expenses		7
Statement of changes in net assets		8
Statement of financial position		9
Statement of cashflows		10
Notes to the financial statements		11-20
Note 1.	General information	11
Note 2.	Significant accounting policies	11-14
Note 3.	Revenue for Australian operations	15
Note 4.	Revenue for New Zealand operations	15
Note 5.	Australian Synchrotron Group costs	15
Note 6.	Other operating costs	15
	(a) Remuneration of auditor	15
	(b) Foreign exchange (gains) / losses	15
	(c) Support for Synchrotron Science	16
	(d) Secretariat and other operating costs	16
Note 7.	Cash & cash equivalents and Investments	16
Note 8.	Other current assets	16
Note 9.	Derivative financial instruments	17
Note 10.	Commitments	17
Note 11.	Trade and other payables	17
Note 12.	Contingent assets and contingent liabilities	17
Note 13.	Related parties	18
Note 14.	Key Management Personnel	18
Note 15.	Events occurring after balance date	18
Note 16.	Share capital	18
Note 17.	Financial instruments	19

Directors

B R Cowan (Chair)	
C L Day	
G B Jameson	
R J Reeves	(appointed on 22-Nov-2024)
G I N Waterhouse	(appointed on 26-Nov-2024)
J B Metson	*(ceased on 22-Nov-2024)*

Registered Office

11 Turnbull Street
Thorndon
Wellington

Nature of business

The purpose of the company is to provide research access in the Australian Synchrotron for researchers from New Zealand. The company also promotes synchrotron science, assists in the capability of New Zealand researchers in synchrotron science and manages the travel funding for New Zealand researchers using the Australian Synchrotron.

Company Registration number

1865516

Independent auditor

Grant Thornton New Zealand Audit Limited

New Zealand Synchrotron Group Limited
Board Report
for the year ended 30 June 2025

The Board has pleasure in presenting the annual report of the New Zealand Synchrotron Group Limited ("NZSG") incorporating the financial statements and the auditors' report, for the year ended 30 June 2025.

The Company has taken advantage of the reporting concessions available to it under sections 211(3) of the Companies Act 1993.

The Board of NZSG has authorised these financial statements presented on pages 7 to 19 for issue on 17 October 2025.

For and on behalf of the Board

B R Cowan
Chair

17-Oct-2025

G B Jameson
Director

17-Oct-2025

Independent Auditor's Report

Grant Thornton New Zealand Audit Limited
L15 Grant Thornton House
215 Lambton Quay
PO Box 10712
Wellington 6140

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To the readers of the New Zealand Synchrotron Group Limited's financial statements for the year ended 30 June 2025

The Auditor General is the auditor of the New Zealand Synchrotron Group Limited (the 'Company'). The Auditor-General has appointed me, Jacques Du Toit, using the staff and resources of Grant Thornton New Zealand Audit Limited, to carry out the audit of the financial statements of the Company on his behalf.

Opinion

We have audited the financial statements of the Company on pages 7 to 19, that comprise the statement of financial position as at 30 June 2025, the statement of comprehensive revenue and expenses, statement of changes in net assets and statement of cash flows for the year ended on that date and the notes to the financial statements that include accounting policies and other explanatory information.

In our opinion the financial statements of the Company:

- present fairly, in all material respects:
    - its financial position as at 30 June 2025; and
    - its financial performance and cash flows for the year then ended; and
- comply with generally accepted accounting practice in New Zealand in accordance with Public Benefit Entity International Public Sector Accounting Standards Reduced Disclosure Regime ('PBE IPSAS RDR').

Our audit was completed on 3 November 2025. This is the date at which our opinion is expressed.

The basis for our opinion is explained below. In addition, we outline the responsibilities of the Board and our responsibilities relating to the financial statements, we comment on other information, and we explain our independence.

Basis for Opinion

We carried out our audit in accordance with the Auditor-General's Auditing Standards, which incorporate the Professional and Ethical Standards and the International Standards on Auditing (New Zealand) issued by the New Zealand Auditing and Assurance Standards Board. Our responsibilities under those standards are further described in the Responsibilities of the auditor section of our report.

We have fulfilled our responsibilities in accordance with the Auditor-General's Auditing Standards.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Responsibilities of the Board for the Financial Statements

The Board is responsible on behalf of the Company for preparing financial statements that are fairly presented and that comply with generally accepted accounting practice in New Zealand.

The Board is responsible for such internal control as it determines is necessary to enable it to prepare financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Board is responsible on behalf of the Company for assessing the Company's ability to continue as a going concern. The Board is also responsible for disclosing, as applicable, matters related to going concern and using the going concern basis of accounting, unless the Board intends to liquidate the Company or to cease operations or has no realistic alternative but to do so.

The Board's responsibilities arise from the Crown Entities Act 2004 and the Education Act 1989.

Responsibilities of the auditor for the audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements, as a whole, are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit carried out in accordance with the Auditor-General's Auditing Standards will always detect a material misstatement when it exists. Misstatements are differences or omissions of amounts or disclosures, and can arise from fraud or error. Misstatements are considered material if, individually or in the aggregate, they could reasonably be expected to influence the decisions of readers taken on the basis of this financial statements.

For the budget information reported in the financial statements, our procedures were limited to checking that the information agreed to the Company's Budget.

We did not evaluate the security and controls over the electronic publication of the financial statements.

As part of an audit in accordance with the Auditor-General's Auditing Standards, we exercise professional judgement and maintain professional scepticism throughout the audit. Also:

- We identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- We obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control.
- We evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the Board.
- We conclude on the appropriateness of the use of the going concern basis of accounting by the Board and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Company's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Company to cease to continue as a going concern.
- We evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

We communicate with the Board regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Our responsibilities arise from the Public Audit Act 2001.

Other information

The Board is responsible for the other information. The other information comprises the information included on pages 3 to 4, but does not include the financial statements and our auditor's report thereon.

Our opinion on the financial statements does not cover the other information and we do not express any form of audit opinion or assurance conclusion thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information. In doing so, we consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated. If, based on our work, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Independence

We are independent of the Company in accordance with the independence requirements of the Auditor-General's Auditing Standards, which incorporate the independence requirements of Professional and Ethical Standard 1: *International Code of Ethics for Assurance Practitioners (including International Independence Standards) (New Zealand) (PES 1)* issued by the New Zealand Auditing and Assurance Standards Board.

Other than in our capacity as auditor, we have no relationship with, or interests, in the Company.

Jacques Du Toit
Grant Thornton New Zealand Audit Limited
On behalf of the Auditor-General
Wellington, New Zealand

New Zealand Synchrotron Group Limited
Statement of comprehensive revenue and expenses
for the year ended 30 June 2025

	Note	*2025 (Unaudited) Budget*	2025 Actual	2024 Actual
		$	$	$
Revenue from non exchange transactions				
Revenue for Australian Operations	3	*2,653,106*	2,644,099	2,593,044
Revenue from exchange transactions				
Revenue for NZ Operations	4	*60,000*	60,000	60,000
Other revenue	4	*221,556*	299,299	249,547
Total Revenue		*2,934,662*	3,003,398	2,902,591
Expenses				
Australian Synchrotron Group costs	5	*2,661,345*	2,486,319	2,378,704
(Gain) / Loss on fair value of derivatives		*0*	5,806	1,636
Other operating costs	6	*405,950*	482,191	486,970
Operating expenditure		*3,067,295*	2,974,316	2,867,310
Total surplus/(deficit) for the year		(132,633)	29,082	35,281
Other comprehensive revenue and expense		-	-	-
Total comprehensive revenue and expense		***(132,633)***	**29,082**	**35,281**

These financial statements should be read in conjunction with the accompanying notes on pages 11 - 19.

New Zealand Synchrotron Group Limited
Statement of changes in net assets
for the year ended 30 June 2025

	Share capital $	Accumulated losses $	Total equity $
Balance as at 30 June 2023	2,912,162	(2,103,144)	**809,018**
Net surplus	-	35,281	35,281
Other comprehensive revenue and expense	-	-	-
Total comprehensive revenue and expenses	-	35,281	35,281
Balance as at 30 June 2024	**2,912,162**	**(2,067,863)**	**844,299**
Net surplus	-	29,082	**29,082**
Other comprehensive revenue and expense	-	-	-
Total comprehensive revenue and expenses	-	29,082	**29,082**
Balance as at 30 June 2025	**2,912,162**	**(2,038,781)**	**873,381**

These financial statements should be read in conjunction with the accompanying notes on pages 11 - 19.

New Zealand Synchrotron Group Limited
Statement of financial position
as at 30 June 2025

ASSETS	**Note**	**2025**	**2024**
		$	**$**
Current assets			
Cash & cash equivalents	7	408,241	797,751
Investments	7	415,378	-
Trade and other receivables from exchange transactions	8	101,415	83,829
Prepayments	8	1,132	-
Derivative financial instruments	9	186	5,992
Total current assets		**926,352**	**887,572**
TOTAL ASSETS		**926,352**	**887,572**
LIABILITIES			
Current liabilities			
Trade and other payables	11	52,972	43,273
Total current liabilities		**52,972**	**43,273**
TOTAL LIABILITIES		**52,972**	**43,273**
Net assets		**$ 873,381**	**$ 844,299**
EQUITY			
Share capital	15	2,912,162	2,912,162
Accumulated losses		(2,038,781)	(2,067,863)
TOTAL EQUITY		**$ 873,381**	**$ 844,299**

For and on behalf of the Board

.....
B R Cowan
Chair

17-Oct-2025

.....
G B Jameson
Director

17-Oct-2025

These financial statements should be read in conjunction with the accompanying notes on pages 11 - 19.

New Zealand Synchrotron Group Limited
Statement of cash flows
for the year ended 30 June 2025

	Notes	2025 $	2024 $
Cash flows from operating activities			
Receipts			
Receipts from non exchange transactions		2,644,099	2,593,044
Receipts from exchange transactions		276,910	305,741
Interest	4	64,803	73,657
Total cash received		**2,985,812**	**2,972,442**
Payments			
Australian Synchrotron Group Costs		(2,486,320)	(2,378,704)
Less: Cash applied to Derivative Asset		-	-
Other expenses		(473,624)	(490,070)
Total cash applied		**(2,959,944)**	**(2,868,774)**
Net cashflows from operating activities	17	***25,868***	***103,668***
Cash flows from investing activities			
Payments			
(Purchase) / Sale of investments		(415,378)	471,503
Total cash (paid) / received		**(415,378)**	**471,503**
Net cash flows from investing activities		***(415,378)***	***471,503***
Net (decrease)/increase in cash and cash equivalents		*(389,510)*	*575,171*
Cash and cash equivalents at 1 July	7	797,751	222,580
Cash and cash equivalents at 30 June	7	**408,241**	**797,751**

These financial statements should be read in conjunction with the accompanying notes on pages 11 - 19.

Note 1. General information

New Zealand Synchrotron Group Limited (“the Company” or "NZSG") was incorporated on 13 September 2006. The Company is a Public Sector Public Benefit Entity. The purpose of the Company is to provide research access to the Australian Synchrotron for researchers from New Zealand. In addition, the Company also promotes synchrotron science, assists the development of capability of New Zealand researchers in synchrotron science and manages the travel funding for New Zealand researchers using the Australian Synchrotron. It has twelve shareholders who are all either New Zealand universities, Crown Research Institutes or Crown Entities. The company is managed by a five person board elected by the shareholders. The Chair receives remuneration; the other directors do not. The Royal Society of New Zealand has been contracted to provide secretariat services to the Board.

The Company’s revenue consists of fees paid by both shareholders and the Ministry of Business, Innovation, and Employment ("MBIE") to provide support services and funds provided by the Australian Synchrotron for travel funding grants. Its registered office is 11 Turnbull Street, Thorndon, Wellington.

The financial statements are prepared on a going concern basis. The Company has entered into agreements for future access to the Australian Synchrotron up until 30 June 2026.

The Board has authorised the financial statements on 17 October 2025.

Note 2. Significant accounting policies

(a) Basis of preparation

The financial statements of the Company have been prepared in accordance with Generally Accepted Accounting Practice in New Zealand (NZ GAAP). They comply with Public Benefit Entity Standards Reduced Disclosure Regime (PBE Standards RDR) and authoritative notices that are applicable to entities that apply PBE Standards.
The Company is eligible and has elected to report in accordance with Tier 2 PBE Standards RDR on the basis that the Company has no public accountability and is not large as defined in XRB A1. The Directors have elected to report in accordance with Tier 2 PBE Accounting Standards and in doing so have taken advantage of all applicable Reduced Disclosure Regime ("RDR") disclosure concessions.
The significant accounting policies adopted in the preparation of the financial statements are set out below. These policies have been consistently applied to all the periods presented, unless otherwise stated.

Statutory base
New Zealand Synchrotron Group Limited (“NZSG” or the “Company”) is a company registered under the Companies Act 1993.

The financial statements have been prepared in accordance with the Financial Reporting Act 2013.

Basis of measurement

These financial statements have been prepared under the historical cost convention, as modified by the revaluation of financial instruments at fair value through surplus or deficit.

(b) Changes in accounting policy

New or amended standards adopted: Disclosure of Fees for Audit Firms’ Services (Amendments to PBE IPSAS 1) has been adopted in the preparation of these financial statements. The amendment changes the required disclosures for fees for for services provided by the audit provider, including a requirement to disaggregate fees into specified categories.
Other than this adoption, there have been no changes in accounting policy.

(c) Foreign currency translation

Functional and presentational currency
The financial statements are presented in New Zealand dollars, which is the Company’s functional and presentation currency.

Foreign currency transactions are translated into the functional currency using the exchange rates prevailing at the dates of the transactions. Foreign exchange gains and losses resulting from the settlement of such transactions and from the translation at year end exchange rates of monetary assets and liabilities denominated in foreign currencies are recognised in the statement of comprehensive revenue and expenses.

(d) Revenue recognition

Revenue from exchange transactions

Revenue from exchange transactions comprises the fair value for the sale of goods and services, excluding Goods and Services Tax, rebates and discounts. Revenue is recognised when services are rendered.

Interest income

Interest income is recognised on a time proportion basis using the effective interest method. When a receivable is impaired, NZSG reduces the carrying amount to its recoverable amount, being the estimated future cash flow discounted at the original effective interest rate of the instrument, and continues unwinding the discount as interest income. Interest income on impaired loans is recognised using the rate of interest used to discount the future cash flows for the purpose of measuring the impairment loss.

Other funding

Other funding includes grants from shareholders, contributions from Australian Synchrotron and other kinds of funding that meet the definition of exchange transactions. Other funding is recognised as revenue when it becomes receivable in the accounting period in which the services or activities related to the funding are rendered or completed. This is by reference to completion of the specific transaction assessed on the basis of the actual service provided or the activity completed as a proportion of the total service to be provided or activity to be completed.

Revenue from non-exchange transactions

Revenue from non-exchange transactions comprises the fair value received from a third party without directly giving approximately equal value in exchange. Non-exchange transactions include contributions from Shareholders and Government grants. As per the Notes 3, 10 and 13 the NZSG shareholders who are party to the Funders Agreement are required to contribute to the costs of new beamlines and access for the Australian Synchrotron.

Government grants

Contract income from the Ministry of Business, Innovation and Employment is a primary source of income for the Company. Government grants and non-government grants are recognised as revenue when they become receivable unless there is an obligation to return the funds if conditions of the grant are not met. If there is such an obligation, the grants are initially recorded as grants received in advance and recognised as revenue when conditions of the grant are satisfied.

(e) Income Tax

From 1 July 2009 the NZSG has been granted a Tax Exemption under Section CW49 of the Income Tax Act 2007. As a consequence NZSG will have no ongoing liability for Income Tax.

(f) Goods and Services Tax (GST)

The statement of comprehensive revenue and expenses has been prepared so that all components are stated exclusive of GST. All items in the statement of financial position are stated net of GST, with the exception of receivables and payables, which include GST invoiced.

(g) Cash and cash equivalents

Cash and cash equivalents includes cash on hand, deposits held at call with financial institutions, and other short term highly liquid investments with original maturities of three months or less, that are readily convertible to known amounts of cash, and which are subject to an insignificant risk of changes in value.

(h) Financial Assets and Financial Liabilities

(h.1) Financial Assets

Initial recognition and measurement

Financial assets and financial liabilities are recognised when the Company becomes a party to the contractual provision of the financial instrument.

Financial assets are classified, at initial recognition, as financial assets at fair value through surplus or deficit or amortised cost. All financial assets are recognised initially at fair value.

Purchases or sales of financial assets that require delivery of assets within a time frame established by regulation or convention in the marketplace (regular way trades) are recognised on the trade date, i.e. the date that the Company commits to purchase or sell the asset.

(h.1) Financial Assets - *continued*

Subsequent measurement

For the purpose of subsequent measurement financial assets for NZSG are classified in two categories:
-Financial assets at fair value through surplus or deficit
-Amortised Cost

(h.1.1) Financial assets at fair value through surplus or deficit
Financial assets at fair value through surplus or deficit include financial assets held for trading and financial assets designated upon initial recognition at fair value through surplus or deficit. Financial assets are classified as held for trading if they are acquired for the purpose of selling or repurchasing in the near term. Derivatives, including separated embedded derivatives, are also classified as held for trading.
Financial assets at fair value through surplus or deficit are carried in the statement of financial position at fair value with net changes in fair value presented as other expenses (negative net changes in fair value) or other revenue (positive net changes in fair value) in the statement of financial performance.

(h.1.2) Amortised Cost
Short-term receivables are recorded at the amount due, less an allowance for expected credit losses (ECL). NZSG applies the simplified ECL model of recognising lifetime ECLs for short-term receivables.
In measuring ECLs, short-term receivables have been assessed on a collective basis because they possess shared credit risk characteristics. They have been grouped based on the days past due. A provision matrix is then established based on historical credit loss experience, adjusted for forward-looking factors specific to the debtors and the economic environment. Short-term receivables are written off when there is no reasonable expectation of recovery. Indicators that there is no reasonable expectation of recovery include the debtor being in liquidation or the receivable being more than one year overdue.

Derecognition
The Company derecognises a financial asset or, where applicable, a part of a financial asset when the rights to receive cash flows from the asset have expired or are waived, or the Company has transferred its rights to receive cash flows from the asset or has assumed an obligation to pay the received cash flows in full without material delay to a third party; and either;
- the Company has transferred substantially all the risks and rewards of the asset; or
- the Company has neither transferred nor retained substantially all the risks and rewards of the asset but has transferred control of the asset.

(h.2) Financial Liabilities

The Companies financial liabilities include trade and other creditors. These amounts represent liabilities for goods and services provided to NZSG prior to the end of financial year which are unpaid. All financial liabilities are initially recognised at fair value and subsequently measured at amortised cost using the effective interest method. The amounts are unsecured and are usually paid within 30 days of recognition.

(h.3) Derivative financial instruments

Derivative financial instruments are initially recognised at fair value on the date on which a derivative contract is entered into and are subsequently remeasured at fair value. Derivatives are carried as financial assets when their fair value is positive and as financial liabilities when their fair value is negative.

Gains and losses arising from changes in the fair value of the derivative financial instruments are presented though the Statement of comprehensive revenue and expenses. Any gains or losses arising from changes in the fair value of derivatives are taken directly to surplus or deficit. The fair value of derivative financial instruments are determined by using valuation techniques. Valuation techniques used include the use of comparable recent arm's length transactions, reference to other instruments that are substantially the same, option pricing models and other valuation techniques commonly used by market participants making the maximum use of market inputs and relying as little as possible on entity-specific inputs.

Financial assets at fair value through surplus or deficit are subject to review for impairment at each reporting date. Derivatives are then impaired when there is any objective evidence that the derivatives are impaired. Impairment losses are incurred if there is objective evidence of impairment as a result of one or more events that occurred after the initial recognition of the derivatives and that loss event has an impact on the estimated future cashflows of those derivatives that can be reliably estimated.

(i) Sponsorship and donations expense

Through the ordinary course of its activities the Company provides sponsorships and makes donations to advance its stated objectives. The Company recognises a liability for this expenditure when the recipient meets any eligibility criteria attached to a sponsorship or donation agreement.

(j) Statement of Cash Flows

The following are the definitions of the terms used in the Statement of Cash Flows:

i) Cash is considered to be cash on hand, cash in transit, bank accounts and deposits with a maturity of no more than 3 months from the date of acquisition;

ii) Investing activities are those relating to acquisition, holding and disposal of investment in ASHC and investments not falling within the definition of cash;

iii) Financing activities are those activities which result in changes in the size and composition of the capital structure of the Company. This includes equity, debt not falling within the definition of cash.

All other activities are classified as operating activities.

(k) Critical judgements, estimates and assumptions

The preparation of the financial statements requires NZSG to make judgements, estimates and assumptions that affect the reported amounts in the financial statements. The Board and management continually evaluate their judgements and estimates in relation to assets, liabilities, revenue and expenses. The resulting accounting judgements and estimates will seldom equal the related actual results. For NZSG, the following are the judgements applied.

Functional Currency: NZSG has exercised significant judgment in determining the entity's functional currency under *PBE IPSAS 4 – The Effects of Changes in Foreign Exchange Rates*.

Factors considered include: that the majority of NZSG's funding is from New Zealand government and entities and is denominated in NZD; NZSG's governance and management is in New Zealand, all NZSG shareholders are New Zealand entities, and NZSG's financial and company reporting obligations are in New Zealand.

Based on these factors, the functional currency has been determined to be NZD. Transactions in other currencies are treated as foreign currency transactions.

Derivative Financial Instruments: NZSG enters into forward exchange contracts to manage foreign currency risk on forecast AUD payments. Judgment was required in; deciding not to apply hedge accounting under *PBE IPSAS 29* , due to the complexity and cost of compliance with documentation and effectiveness testing requirements; determining that derivatives should be measured at fair value through surplus or deficit, with changes in fair value recognised immediately in the Statement of Financial Performance; assessing the fair value of derivatives using observable market inputs (forward exchange rates and yield curves).

This approach results in volatility in reported surplus or deficit, which NZSG considers acceptable given the cost-benefit analysis of hedge accounting.

Note 3. Revenue for Australian operations

	2025 $	2024 $
Revenue from non-exchange transactions		
Ministry of Business Innovation and Employment	1,089,765	1,063,176
Shareholders - contribution to Aust. Synchrotron beamlines	-	-
Shareholders - contribution to Aust. Synch. Operating Costs	1,554,334	1,472,636
Shareholders	-	57,232
	2,644,099	2,593,044

The Company receives support from the Government and shareholders for Australian Synchrotron costs.

Note 4. Revenue for New Zealand operations

	2025 $	2024 $
Revenue from non-exchange transactions		
Ministry of Business Innovation and Employment	-	-
Revenue from exchange transactions		
Grants from shareholders for operating costs of NZSG	60,000	60,000
Other Revenue		
Contribution from the Australian Synchrotron towards travel costs	200,079	175,890
Foreign exchange gains / (losses)	-	-
Funding for paid access to Australian Synchrotron	34,417	-
Interest	64,803	73,657
	299,299	249,547
	359,299	309,547

Note 5. Australian Synchrotron Group costs

Under the agreement with Australian Nuclear Science and Technology Organisation (ANSTO), and as detailed in note 10(a), the Company is required to make an annual contribution to the ongoing operating costs of the Australian Synchrotron.

Contribution to Australian Synchrotron for operating costs	2,486,319	2,378,704
	2,486,319	2,378,704

Note 6. Other operating costs

(a) Remuneration of auditor

During the year the following fees were paid or payable for services provided by the Auditor General appointed auditor - Grant Thornton New Zealand Audit Limited.	2025 $	2024 $
Statutory audit services	13,500	8,450

(b) Foreign exchange (gains) / losses

During the year the following exchange (gains) / losses were made on transactions between New Zealand and Australia.	2025 $	2024 $
Foreign exchange (gains) / losses	8,907	19,711

(c) Support for Synchrotron Science

During the year the following fees were paid or payable for services provided.

	2025 $	2024 $
Travel costs reimbursed to shareholders	201,165	188,474
Paid Access to Australian Synchrotron	90,983	110,273
Capability Build expense	-	-
User Meetings	30,485	27,841
Asia Oceania Forum for Synchrotron Radiation Research Membership	1,000	6,618
	323,633	333,206

(d) Secretariat and other operating costs

During the year the following fees were paid or payable for services provided.

	2025 $	2024 $
Secretariat services from the Royal Society of New Zealand and Board costs	122,618	120,660
Insurance	5,750	4,400
Other	7,783	543
	136,151	125,603
Total other operating costs	**482,191**	**486,970**

Note 7. Cash & cash equivalents and Investments

	2025 $	2024 $
Cash	217,306	392,015
Foreign currency - AUD	190,935	405,736
Cash & cash equivalents	408,241	797,751

	2025 $	2024 $
Term Deposits > 3 months (NZD)	200,000	-
Term Deposits > 3 months (AUD)	215,378	-
Investments	415,378	-

All the bank balances and investments are held with the Bank of New Zealand.

Note 8. Other current assets

(a) Trade and other receivables from exchange transactions

	2025 $	2024 $
Trade receivables	77,376	77,783
Other receivables	12,920	-
Goods and Services Tax receivable	11,119	6,046
Total trade and other receivables	101,415	83,829

(b) Prepayments

	2025 $	2024 $
Prepayments	1,132	-
Total Prepayments	1,132	-

Note 9.	**Derivative financial instruments**	**2025**	**2024**
		$	**$**
	Western Union Forward cover	186	5,992
	Derivative financial instruments	**186**	**5,992**

The following derivatives have been entered into with Western Union.

(a) Forward foreign exchange options

At 30 June 2024	**Notional**	**Strike Price**	**Fair Value**
Forward foreign exchange option (Maturity: February 2025)	$882,353	0.85	$933
Forward foreign exchange option (Maturity: February 2026)	$882,353	0.85	$5,059

At 30 June 2025	**Notional**	**Strike Price**	**Fair Value**
Forward foreign exchange option (Maturity: February 2026)	$882,353	0.85	$186

Note 10. Commitments

(a) Agreement with Australian Nuclear Science and Technology Organisation (ANSTO)

Agreements have been signed on the 14th August 2017, between NZSG and ANSTO whereby NZSG undertakes to provide AUD $12.0m over six years towards the cost of new beamlines and AUD $1.5m per year for nine years (with an inflation adjustment) in return for 6.639% of the access. As part of the Funders' Agreement entered into with 10 of the shareholders and the SIFF Contract with MBIE, these funds will be received directly from the Participants or MBIE when required to fulfil these obligations.

New Zealand shareholders who are party to the Funders' Agreement are irrevocably committed to contribute a total of AUD $12.308m (GST exclusive).

(b) Agreement with Ministry of Business, Innovation and Employment (MBIE)

The company has entered into an agreement with MBIE for Crown Funding totalling AUD $6m plus NZD $10,552,364 over the period 1 July 2017 to 30 June 2026.

Note 11.	**Trade and other payables**	**2025**	**2024**
		$	**$**
	Creditors	-	1,000
	Accruals	52,972	42,273
	Income in Advance	-	-
	Total trade and other payables	52,972	43,273

The amount owed to related parties was nil as at 30 June 2025. (2024: nil).

Note 12. Contingent assets and contingent liabilities

There were no significant contingent assets or contingent liabilities at 30 June 2025 (2024: nil).

Note 13. Related parties

Related parties comprise the shareholders identified in Note 15 and Board members identified in the Directory. There have been a number of related party transactions during the year ended 30 June 2025.

Directors

Transactions with board members include payment of fees. During the year ended 30 June 2025, a total of $9,000 was paid to the Chair (2024: $9,000). As at 30 June 2025, there were no outstanding balances with board members (2024: $0).

Shareholders

Transactions with shareholders during the year ended 30 June 2025 include grants, as per Note 4, amounting to $60,000 (2024: $60,000). Also, as per Note 10, under the agreement with ANSTO the Shareholders who are party to the Funders Agreement are required to contribute a total of AUD $12.308m (GST exclusive) over the nine years of the agreement to 2026. In the year ended 30 June 2025, a total of AUD $1.41m (2024: AUD $1.37m) was contributed by Shareholders who are party to the Funders Agreement and, as at 30 June 2025, there was no outstanding balance with shareholders (2024: nil).

Note 14. Key management personnel

The key management personnel for 2025, as defined by PBE IPSAS 20 are the five members of the governing body (the Board) and one Executive Officer (2024: the same). As per Note 13, the Chair of the Board is paid $9,000 (2024: $9,000) and no other Board members receive remuneration. The Royal Society of New Zealand (RSNZ) is contracted to provide secretariat services, including the services of an Executive Officer. The total amount paid to RSNZ for services for 2025, which includes the services of the Executive Officer was $101,000 (2024: $101,000).

Note 15. Events occurring after balance date

After balance date, the Terms on which NZSG will have future access to the Australian Synchrotron have been agreed and signed with ANSTO. In addition, MBIE has given a commitment to provide funding for the next 5 years towards ongoing access to the Synchrotron, subject to matching support from the research sector.
Other than these matters, there were no significant events occuring after balance date that affect the financial statements (2024: nil).

Note 16. Share capital

Shareholding at cost	2025 $	2024 $
The University of Auckland	509,217	509,217
The University of Waikato	190,357	190,357
Massey University	428,317	428,317
Victoria University of Wellington	237,966	237,966
University of Canterbury	285,546	285,546
Lincoln University	28,557	28,557
University of Otago Holdings Ltd	285,546	285,546
AgResearch Ltd	285,546	285,546
Institute of Geological and Nuclear Sciences Ltd	190,357	190,357
The New Zealand Institute for Plant and Food Research Ltd	190,357	190,357
Callaghan Innovation	192,270	192,270
Auckland University of Technology	88,126	88,126
	2,912,162	2,912,162

The number of shares held at 30 June are:	2025 # of shares held	2024 # of shares held
The University of Auckland	436,319	436,319
The University of Waikato	163,104	163,104
Massey University	367,001	367,001
Victoria University of Wellington	203,897	203,897
University of Canterbury	244,668	244,668
Lincoln University	24,467	24,467
University of Otago Holdings Ltd	244,668	244,668
AgResearch Ltd	244,668	244,668
Institute of Geological and Nuclear Sciences Ltd	163,104	163,104
The New Zealand Institute for Plant and Food Research Ltd	163,104	163,104
Callaghan Innovation	163,104	163,104
Auckland University of Technology	163,104	163,104
	2,581,208	2,581,208

The amount recognised in the balance sheet as paid in capital is the New Zealand dollar equivalent at the date of issue.

Note 17. Financial instruments

Classification of financial assets by category	Fair value through Surplus or Deficit	Amortised Cost
2025	**$**	**$**
Cash and cash equivalents	-	408,241
Investments	-	415,378
Trade & other receivables	-	101,415
Derivative financial instrument	186	-
Total	**186**	**925,034**
2024		**$**
Cash and cash equivalents	-	797,751
Trade & other receivables	-	83,829
Derivative financial instrument	5,992	-
Total	**5,992**	**881,580**

Classification of financial liabilities by category Measured at amortised cost	2025 $	2024 $
Trade & other payables	52,972	43,273
Total	**52,972**	**43,273**